

FINANCIAL TIMES



Election trends

When results are unpleasant

Edward Mortimer, Page 14

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World Business Newspaper

WEDNESDAY JUNE 5 1996

New IRA ceasefire ruled out before Ulster talks start

The IRA ruled out restoring its ceasefire from terrorist activities before the start of next week's all-party talks on the future of Northern Ireland. The UK and Irish governments were last night close to agreeing an agenda for the talks, with London appearing to drop its resistance to a powerful role for former US senator George Mitchell. Page 16

Coca-Cola Enterprises buys Cadbury plants for \$1bn

Cadbury Schweppes sold its British soft-drink plants for about £700m (\$1.06bn) to give it more resources to develop its confectionery and soft drink businesses globally. The buyer was Coca-Cola Enterprises, the US bottler 44 per cent owned by Coca-Cola. Page 17; Lex, Page 16; Strategy in a bottle, Page 21

Deutsche Telekom, the German telecoms operator to be partly privatised in November in one of the world's biggest share issues, reported a 47 per cent increase in net profits from DM3.6bn in 1994 to DM5.3bn (\$3.47bn). Page 18; Lex, Page 16

Russia's Nato opposition 'softening': Germany urged fellow Nato members to take Russia's security interests into account claiming that Moscow was softening its opposition to enlarging the alliance. Page 2

French report urges tax cut: A high-level report submitted to French prime minister Alain Juppé says the government should cut the top rate of income tax from 56.8 per cent to 40 per cent and reduce the number of exemptions. Page 3

Finland prepares for ERM: Finland's parliament was last night set to approve changes in the country's currency laws clearing the way for the Finnish markka to join the European exchange rate mechanism. Page 3

Party rejects Bulgarian president: Bulgarian president Zhelyu Zhelev, 61, has been defeated in his party's primary to choose a candidate for the autumn presidential election. Page 3

Forex dealers plan safeguards: The Group of 20, the world's largest foreign exchange dealers, have stepped up efforts to control the risk of a breakdown in the \$1,230bn in payments that pass between them daily. Page 8

Romanian government in election defeat: Romania's ruling party was bracing itself for a humiliating defeat in local elections as unofficial results suggested it had won only one of the country's main cities. Page 3

Bouryuses, the French construction group, Stet of Italy, Cable & Wireless of the UK and Veba of Germany are preparing to launch a new telecoms venture in France. Page 17

World investment grows 46%: Worldwide flows of foreign direct investment jumped by 46 per cent last year to a record \$325bn from \$222bn in 1994, according to estimates by the United Nations Conference on Trade and Development. Page 8

European smoking campaign: Philip Morris, maker of Marlboro cigarettes, launched a European campaign against smoking bans and other attempts to reduce "smokers' rights". Page 3

Norwegian bank self-off: Norway announced a public offering of 19.8 per cent of Den norske Bank, a stake worth about Nkr12.6bn (\$389m), reducing the state's holding to 52 per cent. Page 19

Portugal drops Renault claim: Portugal is abandoning a \$538m (\$338m) claim for damages against Renault following agreement over the future of a Portuguese plant which the French vehicle manufacturer had threatened to close with the loss of 760 jobs. Page 8

Taxing times in US campaign: President Bill Clinton and Senator Bob Dole made taxation the focal point of their battle for the White House, with Mr Clinton unveiling an initiative estimated to cost \$8bn over six years. Page 4

Tokyo backs \$1.2bn China project: Japanese contractors working on a 20-year power station project in southern China have been granted a \$300m official loan guarantee by Tokyo. Page 16

Abiola's wife killed in Nigeria: Kodirat Abiola, the wife of Moshood Abiola who is facing trial on treason charges for declaring himself Nigerian president after an annulled poll in 1993, died after being shot in the Nigerian capital, Lagos.

Japanese gunship shoots down US fighter: A Japanese destroyer accidentally shot down a US aircraft during naval exercises in the mid-Pacific, but the fighter's two crew members escaped injury.

STOCK MARKET INDICES		COLD	
New York: Dow Jones Ind. 6,681.05 (+38.90)	NASDAQ Composite 1,243.93 (+3.2)	New York: Corn (Aug) 3.82 1/2 (33.0)	London: close 5,380.75 (31.35)
S&P 500 1,243.93 (+3.2)	CAC40 2,111 (+10.1)	NY: Soybeans (Jul) 1.58 1/2 (11.0)	NY: Dollar (vs DM) 1.5271 (1.2425)
DAX 2,548.25 (+13.42)	FT-SE 100 3,726.2 (+1.6)	NY: Wheat (Jul) 1.22 1/2 (10.225)	London: £ 1.5485 (1.5455)
Nikkei 21,558.12 (+208.6)		NY: Gold (per ounce) 318.77 (1.25)	NY: Sterling (vs £) 1.5271 (1.2425)
US LUNCHTIME RATES		STERLING	
Federal Funds 5 1/4%	3-mth T-bill 5 1/8%	DM 2.3741 (2.35)	Tokyo \$ close: ¥ 188.4
Long Bond 6 1/8%	6-mth T-bill 5 1/4%		
OTHER RATES			
UK 3-mth Interbank 6 1/4%	US 10 yr Bond 6 1/2%		
France 10 yr OAT 105.21 (105.21)	Germany 10 yr Bond 6 1/2%		
Japan 10 yr JGB 58.8877 (58.8877)			

Illegal ticket sales threat to Euro 96

Trade will make segregation of rival fans impossible

By Jimmy Burns, Patrick Harverson and Simon Kuper

Security arrangements for Euro 96 are being put at risk because of the growing numbers of illegal tickets going on sale four days from the start of the football tournament, soccer police officers warned yesterday. Superintendent Stuart Morgan, head of planning and logistics for Hillsborough stadium in Sheffield, one of the venues, said last night: "The way tickets are being sold is going to make segregation of fans impossible. We don't know where they're going or who has them. We are

preparing ourselves for rival fans sitting next to each other and that is going to cause problems in terms of crowd control," he added. The ticketing system for Euro 96 has been designed to keep rival fans apart. Supporters have only been allowed to buy tickets from authorised national football federations in groups of fellow nationals. Despite attempts by the police and the Football Association, the

host of the championship, to crack down on illegal ticket sales, tickets were widely available in London yesterday. The Financial Times contacted two travel agencies, a ticket outlet and a tout, all of which offered to sell Euro 96 tickets, including for potential flash-points such as the England-Holland and England-Scotland games at Wembley. The ticket agency asked £175 each for five tickets to sit with England fans at the Holland

game, although the tickets carried a face value of only £45 each. The agency did not inquire about the nationality of the buyers. The tout said tickets for the England-Scotland game with a face value of up to £35 could be bought for £280 each. The tout said they had obtained their tickets through a variety of sources, including one European football federation which had been unable to sell its quota and a continental travel operator which had also

been left with unsold seats. One City banker said he had been offered 24,000 for 22 tickets worth £900 by a ticket agency. Official ticket prices for Euro 96 range from £16 to £75 for first round and quarter-final matches, from £40 to £90 for the semi-finals, and from £50 to £130 for the final. The only legal outlets for tickets in the UK are the FA, the football clubs staging the games, Keith Prowse and Sports World, the official corporate hos-

pitality agencies. Some agencies in the UK are authorised to sell tickets on behalf of foreign federations but only to foreign nationals. At the start of this week the FA said only 140,000 of the 1.4m tickets were left unsold. Police officers representing all 16 competing countries are due to meet in London tomorrow to finalise an unprecedented international effort aimed at controlling violence. They will receive an updated intelligence report, based on one in March, which identified British, German, Dutch, and Turkish potential troublemakers.

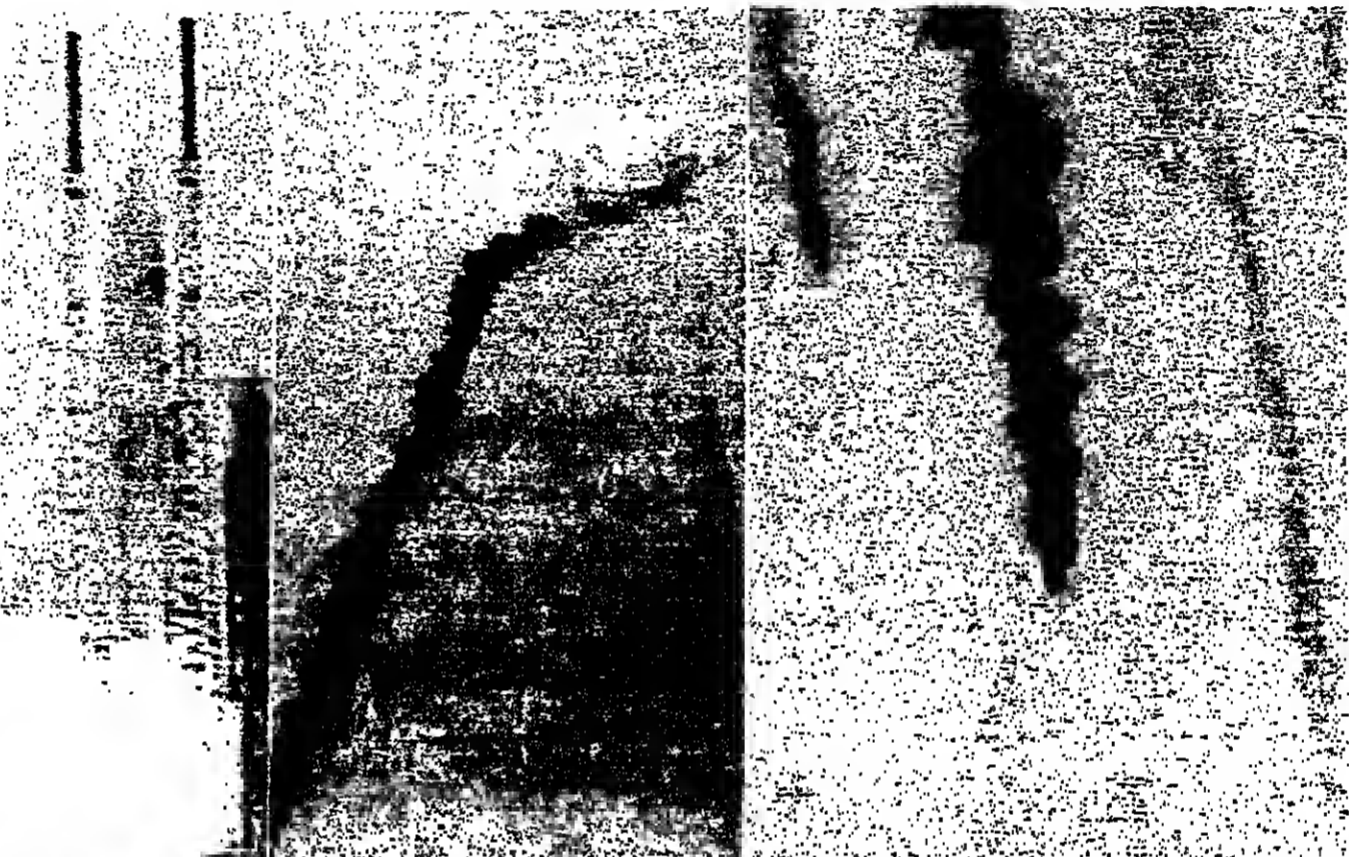
Failure throws into doubt Europe's leadership of commercial space transport industry

Ariane 5 explodes as rocket veers off course

By David Owen in Paris

Europe's leadership of the \$3bn-a-year commercial space transport industry was thrown into doubt yesterday when the new Ariane 5 rocket exploded 40 seconds into its maiden flight from French Guiana. The rocket, the largest built in western Europe, was destroyed by ground control after it veered off course. The launch, which cost an estimated \$500m and rained flaming debris near the European Space Agency's launch centre, was not insured, according to agency officials. The rocket was carrying four small scientific satellites intended to study the relationship between the earth and the sun.

The failure will deal a severe blow to Arianespace's hopes of continuing to dominate the increasingly competitive market in commercial satellite launches. In recent years, the French-based group - whose 53 European shareholders comprise many of the companies which help build the Ariane rockets - had taken about 50 per cent of this market, which was once dominated by the US. But a string of new competitors - involving many of the biggest names in the US defence and aerospace sectors, including Boeing and McDonnell Douglas - is expected over the next two years. Analysts expect competition to intensify further early in the next century when they predict a temporary decline in demand for



The Ariane 5 rocket takes off... 39 seconds later it explodes... the debris falls to earth

satellite-launching services. Space officials had no immediate explanation for yesterday's failure, but said a commission of inquiry would report its preliminary findings within eight days. Among possible explanations from experts watching the launch were: a failure of the attitude control system; failure of one of the booster rockets leading the craft to spin out of control; some other failure which led safety officers to abort the mission as the rocket veered off course. Space officials promised to press ahead with the project. Under the original timetable, a second Ariane 5 flight was

planned for the autumn, with the first commercial launch set for early next year. Mr Charles Bigot, Arianespace chairman, said the failure was "a disappointment, but... I know we must always bounce back after a disappointment". He indicated the next launch of Ariane 4, the smaller rocket which Ariane 5 is scheduled to replace after a three-year transition phase, was still expected to take place on June 12. Mr Francois Fillon, the French space minister, said the government's confidence in the builders of Ariane 5 "remains total". Nasa, the US space agency, expressed its sadness at the fail-

ure and said it was convinced its European counterpart would "determine the causes". ESA officials have said in the past that Ariane 5 is theoretically much safer than Ariane 4, having a risk of one possible failure every 70 launches, compared with one every 15-20 launches with the smaller rocket.

The build-up to the launch took 11 years and cost \$7bn. The new rocket, which is designed to be able to launch two heavy communications satellites at a time, has little in common with its predecessor.

Explosion shatters Ariane's hopes, Page 6

PC makers agree merger scheme

By Louise Kehoe in San Francisco and Mitsuho Nakamoto in Tokyo

NEC, Japan's leading personal computer maker, has agreed to merge its non-Japanese and non-Chinese PC operations with those of Packard Bell, the unprofitable leader of the US home PC market. The companies presented the deal as the formation of a global PC giant with potential combined revenues of about \$8bn, making it the world's fourth-largest PC manufacturer after Compaq Computer, International Business Machines and Apple Computer. The deal appears also to be aimed at improving Packard Bell's financial performance and providing NEC with an insurance policy against the day when its Japanese language proprietary system can no longer compete effectively against international systems. In April, NEC invested \$283m in Packard Bell, raising its 19 per cent stake to an effective 40 per cent, including preference shares. At the same time, Groupe Bull of France also acquired a 19 per cent stake in Packard Bell, through the transfer of Zenith Data Systems, its struggling PC

Continued on Page 16 Lex, Page 16

Bankers prepare to discuss rescue package for KHD

By Michael Lindemann in Bonn

The outlines of a rescue package for Klöckner-Humboldt-Dietz, the German engineering group which is struggling to stave off bankruptcy, emerged as German and international banks prepared for a meeting today to decide the group's future. However, it remained unclear whether a rescue attempt would succeed because KHD, which has uncovered hidden losses of DM650m (\$427m), refused to say whether Mr Anton Schneider, its chief executive, had been able to persuade three of KHD's clients in Saudi Arabia to waive penalty payments on contracts for cement plants. The government of North Rhine-Westphalia, the north-western state where KHD is based, yesterday agreed to sign a letter of intent to buy KHD properties worth DM650m. The city of Cologne, which is home to KHD and stands to lose up to 5,000 jobs if the group goes bankrupt, has agreed to pay the

same amount so that the two partners could together put up DM175m to buy properties in Cologne, Mannheim and a number of other sites, which KHD would then rent back. Mr Wolfgang Lieb, a spokesman for the state government, said he expected the property purchase to conform to European Union guidelines. Officials said Deutsche Bank would shoulder most of the unspecified rescue package, contributing DM650m. Press reports suggested that debts worth DM300m would be forgiven and that the bank would inject fresh funds worth DM250m. Deutsche Bank declined to comment. KHD's workforce, which numbers 9,425 at several plants across Germany, is prepared to take a wage cut, work longer and forgo part of their pension entitlement in order to save "over DM100m" which would go towards the rescue package, executives said. Other banks which are members of the KHD consortium, including Dresdner Bank and

Bayerische Vereinsbank, are expected to be asked to forgo interest payable on loans to the company, which according to press reports total DM19bn. KHD said it planned a press conference at 2pm in Frankfurt today to "present details of a restructuring concept following the irregularities and manipulations at KHD Humboldt Dietz", the group's subsidiary which specialises in cement plants. Humboldt Dietz had made bids for cement plant contracts in Saudi Arabia in recent years which were at least 20 per cent below market prices. As bankers prepared to discuss the viability of a rescue, press reports suggested that KHD faced losses of DM200m, considerably higher than the DM650m first reported last week. However, neither the company nor Deutsche Bank, which owns 47.7 per cent of KHD and has co-ordinated the rescue attempts, would comment on the higher losses. "Talks are still taking place," one executive said.

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Finnish markka on course for ERM

Parliamentary vote last night would clear way for government to seek early membership

By Hugh Carnegy in Stockholm

Finland's parliament was last night set to approve changes in the country's currency laws, clearing the way for the markka to join the European exchange rate mechanism, and fuelling speculation that the government may soon seek such a move.

The recent relative stability and strength of the markka coupled with Finland's low inflation outlook and current account surplus, have led many economists and market analysts to predict a Finnish move into the ERM in preparation for joining the planned European monetary union in 1999.

Mr Paavo Lipponen, the Social Democratic prime minister, reiterated earlier this week his belief that Finland should be among the first members of ERM. "When ERM is born, it is best that Finland be among the first to join because ERM will then become an economic and political reality," he told a trade union conference.

On the same day, Mr Sauli Niinistö, the Conservative Finance Minister in the left-right coalition, said he believed pressure from Finland's European partners would be such that it would be necessary for the markka to join the ERM if the country was to qualify for ERM.

The qualification criteria outlined in the Maastricht treaty foresee two years in the ERM for potential ERM participants before ERM membership is decided in 1998. Mr Niinistö's comments implied Finland would have to join the mechanism this year.

A technical obstacle was the wording of the currency laws which were framed to enable the markka to be linked to the Ecu, as it was in June 1991. The link was short-lived as a crippling recession forced Finland to float its currency in September 1992. Once signed by President Martti Ahtisaari, the reworked new currency law will free the government to join the ERM.

The markka, at around Fm3.10 to the D-Mark, has been trading well within ERM fluctuation margins. One difficulty for Finland in deciding when to move into the ERM is the position of Sweden, its much bigger neighbour. Mr Eric Asbrink, the Swedish finance minister, yesterday repeated that Swedish membership of the ERM was not "current", denying market rumours that Finland, Sweden and Italy would hold talks on a co-ordinated ERM move at a meeting of the EU's monetary committee in Stockholm in 10 days time.

The Swedish krona is also widely seen in financial markets as approaching the conditions for ERM membership. It rose to its highest level against the D-Mark yesterday since December 1992, reaching SKr4.57, following the 12 cuts in the key short-term "repo" rate by the central bank this year. The rate was cut yesterday by 0.2 percentage points to 6.3 per cent.

However, the Swedish Social Democratic government insists ERM membership is not a vital condition for ERM membership and has repeatedly denied it intends an early entry.

Bonn says Russia easing Nato stance

By Bruce Clark in Berlin

Germany yesterday strongly urged its fellow Nato members to take Russia's security interests into account, and claimed that Moscow was softening its opposition to enlarging the alliance.

But senior US and French officials said Russia had signalled a change of tone, though not of substance, in its attitude to Nato at a meeting in Berlin of the western alliance and its former adversaries.

Chancellor Helmut Kohl said a new relationship between the alliance and Russia should "form the core of the future European security architecture". Russia and Ukraine "are part of Europe and must take their security interests into consideration", he said, while reaffirming that he viewed as "legitimate" the desire of some ex-Communist states to join Nato soon.



Primakov (left) and Solana in Berlin yesterday, seeking better Russia-Nato relations

Mr Kohl, underlining his country's determination to find a formula for Nato expansion that would avoid alienating Moscow.

Mr Klaus Kinkel, the German foreign minister, said his Russian counterpart, Mr Yevgeny Primakov, had told the Nato meeting that Russia "was not against enlargement in principle" and it understood some countries wanted to join.

According to Mr Kinkel, the Russian minister went on to say that his country's main objection was to the possible establishment of Nato structures near its own borders.

US diplomats gave a similar assessment. British officials said Mr Primakov had expressed appreciation of several points in an announcement, issued by Nato ministers on Monday, which called for a more flexible alliance, adapted to a post-cold war world.

Britain wants an upgrading of Partnership for Peace, the Nato-inspired military co-operation programme, in the hope that Nato can maintain a close relationship with those ex-Communist states that do not join the alliance.

Greece reins in forex borrowing

By Karin Hope in Athens

Greece's central bank yesterday took steps to restrain foreign currency borrowing by Greek companies and consumer lending to individual Greeks. It was responding to a 30 per cent rise in commercial bank loans to the private sector in the first four months of this year.

The compulsory reserve requirement for commercial banks has been raised from 11 per cent to 15 per cent of deposits, and all foreign currency assets and liabilities are to be included in the reserve requirement.

Spain cuts its key interest rate

By Bruce Clark, Berlin, and John Barham, Ankara

The Bank of Spain yesterday kept a step ahead of market expectations by announcing a surprise quarter-point cut in its benchmark interest rate from 7.5 per cent to 7.25 per cent, bringing it to its lowest level in recent years.

The reduction, the fifth since the beginning of the year when the rate stood at 9 per cent, came as a boost to the centre-right government after a cool response in financial circles to its plans for curbing budget expenditure.

Azeri oil deal worth \$4bn signed

By Bruce Clark, Berlin, and John Barham, Ankara

A consortium of multinational oil companies, including Iran's state oil company, yesterday signed a \$4bn deal to exploit the Shakh-Deniz oil and gas deposit off Azerbaijan's Caspian Sea coast, the second largest in the ex-Soviet republic.

The consortium is led by British Petroleum and Norway's Statoil, who will control 51 per cent of the joint venture. The deposit is estimated to contain 4bn cubic metres of natural gas and 200m tonnes of natural gas condensate and oil.

France Telecom strike weakens

By Peter Graff, Paris

Protests by France Telecom employees against the partial privatisation of the state-owned utility appeared yesterday to be petering out, when only a third of its staff responded to a strike call. The response to similar strikes was 75 per cent of the utility's 150,000 employees last December and 45 per cent last month.

Union leaders attributed the decline in strike turnout to concessions by the government that guaranteed the civil servant status of existing employees. The French parliament is now debating bills to deregulate the telecommunications market in 1998, with up to 49 per cent of France Telecom to be sold off to employees and investors.

Czech politicians start to pick up the pieces

Calm is returning after the turmoil of last week's inconclusive election, writes Vincent Boland

The quiet hum of a functioning country was still discernible yesterday in the airy corridors of government in Prague. A degree of calm returned to Czech political discourse and even to the financial markets as the inconclusive outcome of last week's general election sank in.

Faced with the task of extricating the Czech Republic from the gridlock created by the loss of Mr Vaclav Klaus's parliamentary majority after the poll, the country's polarised political parties began a tentative search for that vaunted Czech quality - compromise.

Mr Klaus and Mr Milos Zeman, the opposition Social Democrat (SSD) leader and in effect the big winner in the election, were still keeping a careful distance. They must decide the immediate political future, and both know they will have to talk some time, but not just yet.

President Vaclav Havel caused some surprise on Monday when he did not ask Mr Klaus to form a new government immediately. Yesterday, he was strongly attacked for delaying by the leading pro-Klaus daily, Mlada Fronta Dnes. But Mr Jiri Pehe, an analyst at the Open Media Research Institute, said Mr Havel was wise to wait.

If Mr Klaus were to bring a minority administration before parliament too soon it would almost certainly be defeated by a united opposition, he said. "That would cause real instability rather than the simple deadlock we have now."

Mr Zeman's claim that he would not support Mr Klaus as prime minister has still to be tested. But yesterday there was speculation that the price of that support - which the government might be willing to concede - was to appoint the SSD leader chairman of parliament.

Mr Klaus's immediate task, however, is to regroup his outgoing centre-right government, which won 99 out of 200 seats in the new parliament, on the assumption that he will be the first to be asked to form a new administration. These talks will be complicated by the need to bear the Social Democrats in mind, because opposition support will be essential to its survival. The SSD won 61 seats and the combined opposition won 101.

However, the coalition partners - the Civic Democratic party (ODS), the Christian Democrats (KDU) and the Civic Democratic Alliance (ODA) - will have to paper over many policy differences that were increasingly apparent before the election and in their separate campaigns.

Several times in the past 18 months their old coalition seemed close to breaking point, but the commanding position of the ODS and Mr Klaus's authority and occasional compromises kept it intact. And many observers noted that the three parties spent as much time on the campaign trail highlighting their own differences as in attacking the left.

The KDU's vision of a social market economy has often been at odds with Mr Klaus's individualist approach and the more hard-edged economic views of the ODA. Although it has supported mass privatisation, it is not an instinctively free-market party and has supported mainly among rural Catholic voters.

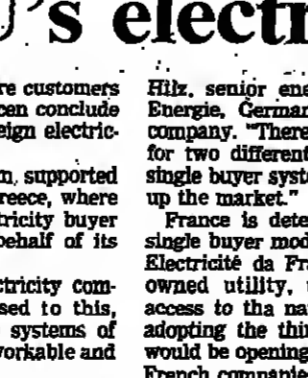
The fragmentation of the left in Czech politics in 1992, however, meant that the fiercely anti-Communist KDU chose to exercise power through a marriage of convenience with the moderate right. That coalition saw the implementation of mass privatisation and a slow restructuring of the economy that kept unemployment low and generated a remarkable degree of social cohesion in a country that likes consensus.

Now that the moderate left is stronger, it will be more difficult to take the tough measures that will enable the Czech Republic to bridge the wide gap in living standards with the countries of the European Union, which it is desperate to join.

Among the measures are liberalisation of rent and energy prices, further privatisation, especially of the banking sector, the restitution of property confiscated by the Communists from the church, and social reform and decentralisation. "These are issues that surfaced long before the outcome of this election, but were postponed on the assumption that Mr Klaus would have another four years to implement them."

The new Czech parliament

The parties



Mr Jiri Weigl, chief adviser to Mr Klaus, said yesterday that the partners were confident they could regroup. "There is a feeling of common ground among the coalition partners," he said. The question was whether it would find support from Mr Zeman. "Everybody has learned a little bit" from the election result, Mr Weigl said.

On an economic reform and will insist that Mr Klaus remain prime minister.

Mr Jiri Weigl, chief adviser to Mr Klaus, said yesterday that the partners were confident they could regroup. "There is a feeling of common ground among the coalition partners," he said. The question was whether it would find support from Mr Zeman. "Everybody has learned a little bit" from the election result, Mr Weigl said.

Overall vote by about 2 points, to 44 per cent but six seats fewer than in the last election in 1992. This is because of a sharp fall in the number of votes cast this time for parties that did not win the minimum 5 per cent necessary to get to parliament.

But that, and the fact that the unreformed Communists were the only party to lose substantial support in the election, is little consolation to Mr Klaus.

France and Germany try to settle differences over cross-border competition

Move to open EU's electricity markets

By Neil Buckley in Brussels and Judy Dempsey in Berlin

Germany and France will today try to break a four-year deadlock over proposals to open the European Union's electricity markets to cross-border competition. Their ministers will meet in Dijon as part of a regular series of bilateral summits. But the task facing the two countries - whose differences have stalled attempts at an EU-wide agreement in principle last month.

Today's meeting was envisaged as a discussion on the extent of liberalisation and the timetable. Concern is mounting, however, that any deal could be imperilled by an issue they thought had been settled: last month's decision that member states should be allowed to select one of two models of market access.

Germany and the UK, where customers (end-users or distributors) can conclude contracts directly with foreign electricity suppliers.

The UK, which, with Scandinavia, has gone furthest in liberalising its energy sector, has been lobbying German officials not to accept it. German electricity companies, whose own monopoly of domestic supply and distribution will be weakened by legislation currently being drafted, have also been lobbying Bonn.

"This proposed compromise defies all economic rationale," said Mr Christoph Hilz, senior energy analyst at RWE-Energie, Germany's largest electricity company. "There is no place in Europe for two different energy systems. The single buyer system is far from opening up the market."

France is determined to defend the single buyer model, which would allow Electricite de France (EDF), the state-owned utility, to retain control of access to the national grid. Countries adopting the third-party access option would be opening their markets fully to French companies.

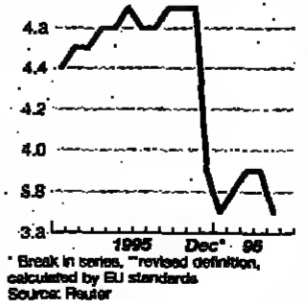
France and EDF argue that the single buyer system does not impede access, and will lead to better long-term management of energy resources and policy. Differences over the two systems threaten to reopen the whole debate about the liberalisation framework agreed in Brussels last month. That envisages equal market opening in all countries, increasing in stages over a set period, with states allowed to

impose obligations relating to safety and environmental matters on electricity companies.

The Italian presidency last month proposed that 25 per cent of the market - accounted for by the biggest electricity users - would open initially, rising to 30 per cent over nine years. Germany wants the market to open further and faster; France wants more restricted opening with a longer timescale.

Austrian jobless rate falls

Austrian unemployment



Austria's unemployment rate eased to 3.7 per cent in May from 3.9 per cent in April, but was up slightly from an adjusted 3.6 per cent a year ago, the labour office reported yesterday. The unadjusted number of unemployed stood at 207,879 last month, down 12.4 per cent from April and 7.7 per cent higher than in May 1995. The government took credit for the improvement in the month and attributed it to job-creation measures and public works projects.

Economists, however, pointed to a 22 per cent drop in job vacancies as a bad sign. Austria has the second-lowest unemployment rate in the European Union after Luxembourg, but the rate has edged up steadily over the past year, with economists predicting jobless rates of up to 5 per cent in the next few years. The unemployment figures appear particularly low to Austrians, who are used to higher figures from a different calculation method. The government has now adopted the EU method, based on surveys, rather than actual registrations at unemployment offices.

Eric Frey, Vienna ■ The Swedish central bank cut its repo rate from 6.5 to 6.3 per cent yesterday. It was the twelfth cut since January. ■ Swiss retail sales fell 1.3 per cent in real terms in April from a year earlier. In March, retail sales fell 2.3 per cent.

EUROPEAN NEWS DIGEST

Greek-Turkish island row flares



Greece said yesterday that Turkey had sharply escalated its territorial demands by questioning the status of an inhabited island south-west of Crete. Mr Theodore Pangalos, the Greek foreign minister, said a Turkish representative had demanded the exclusion of the island of Gavdos from a forthcoming Nato exercise, because of its "disputed status" under international treaties. He also quoted Captain Museyin Gicel, Turkey's representative at Nato's south European command in Naples, as saying "other islands and/or tiny rocks which surround Crete" should be excluded from the war game. Athens is under pressure from fellow members of the European Union to unfreeze EU credits to Turkey. It is refusing to do so unless Ankara agrees to submit its claims in the Aegean to international arbitration.

Mr Pangalos said Gavdos had about 300 residents. No Turkish foreign ministry officials could comment on the affair, while the government itself is on the verge of dissolution. The government-owned Anatolia news agency commented: "At this stage the Turkish side is saying it is neither Greek nor Turkish."

Spain cuts its key interest rate

The Bank of Spain yesterday kept a step ahead of market expectations by announcing a surprise quarter-point cut in its benchmark interest rate from 7.5 per cent to 7.25 per cent, bringing it to its lowest level in recent years. The reduction, the fifth since the beginning of the year when the rate stood at 9 per cent, came as a boost to the centre-right government after a cool response in financial circles to its plans for curbing budget expenditure. Analysts, who had been expecting the central bank to wait before deciding whether to make another reduction, saw the move as a response to slower than expected growth this year. The finance ministry said the cut should have a positive effect on economic activity and jobs, and expressed confidence there would be further reductions. However, employers' leaders in the industrial Basque region criticised the move as too modest, saying it was not enough to offset the effects that the peseta's recent strength was having on competitiveness.

Azeri oil deal worth \$4bn signed

A consortium of multinational oil companies, including Iran's state oil company, yesterday signed a \$4bn deal to exploit the Shakh-Deniz oil and gas deposit off Azerbaijan's Caspian Sea coast, the second largest in the ex-Soviet republic. The consortium is led by British Petroleum and Norway's Statoil, who will control 51 per cent of the joint venture. The deposit is estimated to contain 4bn cubic metres of natural gas and 200m tonnes of natural gas condensate and oil. France's Elf Aquitaine, Russia's Lukoil and the state oil companies of Azerbaijan and Iran each have 10 per cent shares in the project. Turkiye Petrolleri of Turkey has the remaining 9 per cent. Shakh-Deniz is the first project in Azerbaijan not to involve US companies and so the first in which Iran has been allowed to participate. Tehran's presence in Azerbaijan's offshore oil industry has been considered vital because Iran officially challenges Azerbaijan's claim to title over offshore Caspian resources.

France Telecom strike weakens

Protests by France Telecom employees against the partial privatisation of the state-owned utility appeared yesterday to be petering out, when only a third of its staff responded to a strike call. The response to similar strikes was 75 per cent of the utility's 150,000 employees last December and 45 per cent last month. Union leaders attributed the decline in strike turnout to concessions by the government that guaranteed the civil servant status of existing employees. The French parliament is now debating bills to deregulate the telecommunications market in 1998, with up to 49 per cent of France Telecom to be sold off to employees and investors. Today unions at Electricite de France (EdF) have called demonstrations to protest against moves to liberalise the "European energy market. Mr Francis Borotra, the industry minister, said yesterday that EdF would remain "a 100 per cent state enterprise". But France is now prepared to try to negotiate a compromise permitting foreign producers to sell electricity to large industrial users.

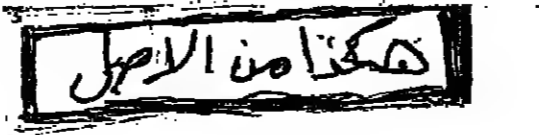
Politician welcomes drug charge

Mr Marco Pannella, the gadfly radical of Italian politics, yesterday achieved his ambition of being sent for trial on charges of distributing drugs as part of his campaign to decriminalise the use of soft drugs. A Rome judge decided he had broken the law on distributing marijuana and hashish after a demonstration last December to promote their legal use. On this occasion he was to be sent to the crowd eight bags, each containing a gramme of hashish, and three packets of marijuana each with 100g inside. Earlier, he had publicly handed out marijuana at Rome's Sunday Portese market and produced some on a TV programme. Mr Pannella, who was responsible for introducing divorce and abortion laws via referendums, is promoting a referendum to legitimise the use of soft drugs. He lost his seat in the April general elections and is no longer protected by parliamentary immunity.

ECONOMIC WATCH

Austrian jobless rate falls

Austria's unemployment rate eased to 3.7 per cent in May from 3.9 per cent in April, but was up slightly from an adjusted 3.6 per cent a year ago, the labour office reported yesterday. The unadjusted number of unemployed stood at 207,879 last month, down 12.4 per cent from April and 7.7 per cent higher than in May 1995. The government took credit for the improvement in the month and attributed it to job-creation measures and public works projects. Economists, however, pointed to a 22 per cent drop in job vacancies as a bad sign. Austria has the second-lowest unemployment rate in the European Union after Luxembourg, but the rate has edged up steadily over the past year, with economists predicting jobless rates of up to 5 per cent in the next few years. The unemployment figures appear particularly low to Austrians, who are used to higher figures from a different calculation method. The government has now adopted the EU method, based on surveys, rather than actual registrations at unemployment offices. Eric Frey, Vienna ■ The Swedish central bank cut its repo rate from 6.5 to 6.3 per cent yesterday. It was the twelfth cut since January. ■ Swiss retail sales fell 1.3 per cent in real terms in April from a year earlier. In March, retail sales fell 2.3 per cent.



Bulgarian president loses primary poll

By Theodor Troev in Sofia

Bulgarian President Zhelyu Zhelev has been heavily defeated in his party's week-end primary to choose a candidate for the presidential election scheduled for the autumn, according to the official result released yesterday.

Mr Petar Stoyanov, 44, and a little-known lawyer, will be the candidate for the Union of Democratic Forces (UDF) which is presently in opposition to the governing Bulgarian Socialist party (BSP) in the country's parliament.

Mr Zhelev, 61, a dissident philosopher under the communist regime of Todor Zhivkov, was elected Bulgaria's first post-communist head of state in 1990.

He said last night he would abide by the result, withdraw his candidacy and support Mr Stoyanov. "The poll shows that Bulgarian society wants change," he said.

The Central Electoral Commission said that Mr Stoyanov won 66 per cent of votes cast against President Zhelev's 34 per cent. Around 880,000 Bul-

garians took part in the primary, exceeding the expectations of the organisers who described it as a triumph for the Balkan country's democracy. All Bulgarian adults - some 6.5m people - were entitled to take part in the election, but supporters of the Socialists and other leftwing groups largely shunned the poll.

The UDF is seeking to make the presidential campaign into a springboard for early parliamentary elections.

Yesterday it joined other opposition parties, the People's Union and the ethnic Turk Movement for Rights and Freedoms to call for a vote of no confidence in the Socialist government of the prime minister, Mr Zhan Vitanov, over its handling of the country's economic crisis.

Mr Stoyanov has been prominent in recent days at protest rallies calling on the government to resign and claiming that it was unable to carry out urgently needed economic reforms. He has blamed the government for the current shortages of bread and petrol.

"Bulgaria is on the brink of catastrophe. There is no hope, no fuel, no bread," he said.

The opposition is unlikely to win the confidence vote, which is expected to be held next week, as the Socialist government has an absolute majority.

Bulgarians have been hit hard in recent weeks by steep price rises and by shortages of bread and fuel, which have followed in the wake of drastic increases in interest rates aimed at averting a collapse in the currency. The government, in power for 17 months, increased value added tax last week by four percentage points to 22 per cent.

It also announced further rises in import taxes and excise duties and an 80 per cent increase in fuel prices to bolster the state budget and to raise funds to pay for reforms agreed with the International Monetary Fund.

The tax increases, which are expected to raise the rate of inflation by 6 per cent a month, have led to anti-government protests by thousands of pensioners, traders and taxi drivers in the capital.



Look of resignation: President Zhelyu Zhelev of Bulgaria voting in last weekend's US-style primary election which he lost

Radical tax reforms urged in France

By Andrew Jack in Paris

The French government should cut the top rate of income tax from 56.8 per cent to 40 per cent and substantially reduce the number of exemptions, according to a high-level report submitted to Mr Alain Juppé, the prime minister, and released yesterday.

The report, by a group of five senior civil servants, contains a strong indictment of the French tax system and calls for a series of radical changes which are likely to be controversial.

It calls for the lowest-paid to be exempt from tax, for the existing sliding scale to be reduced to six bands, for higher income earners to be taxed on family allowances and for the lower income tax ceiling to be balanced by eliminating the practice of deducting 20 per cent from an employee's earnings before calculating tax.

Ministers are urged to consider greater harmonisation of professional tax - levied on companies by a range of different levels of local government

largely on the basis of the number of staff employed and investment undertaken.

The report says that meaningful tax reform cannot take place without a reduction in public expenditure; that spending should be balanced by tax revenues; and that excessive simplification of the system could risk triggering injustices.

It criticises proposals being discussed at the European Commission for a switch in the "destination-based" system of value added tax to one levied at the point of origin of the goods or services being sold. It says such a system would create substantial conflicts.

Mr Juppé stressed on Monday ahead of the report's publication that he would not be bound by its conclusions, but his statement echoed a number of its recommendations.

His proposal for a new universal health insurance charge triggered an angry response from French unions, with Force Ouvrière calling it a precursor to the privatisation of the medical system and the Communist-backed Confédération Générale du Travail

describing it as "demagogic".

Mr Dominique de la Martinière, who headed the report, yesterday said on French radio that his recommendations would be "torn to pieces" over the next few months by pressure groups and politicians, and be "thrown to the dogs".

His report says taxes and other charges now represent a record 45 per cent of gross domestic product, the highest proportion in any large developed country. It warns of the sharply growing burden of social expenditure, notably in health care, and of the danger of the more rapid growth in real wages of public sector workers.

It says the tax system has lost its elasticity, with each rise in charges accompanied by a sharp growth in the number and value of tax deductions claimed as people adopt "survival tactics". It also calls for modification to the incentives payable on life assurance products, with renewed emphasis on encouraging the country's nascent pension system.

Unofficial local election results suggest that only one main city was won

Voters shun Romania's ruling party

By Virginia Marsh in Budapest

Romania's governing Party of Social Democracy (PDSR) was last night bracing itself for a humiliating defeat in the current round of local elections as unofficial results from Sunday's first round suggested it had won only one of the country's main cities.

The elections, the first nationwide polls for nearly four years, are an important test for Romania's many political parties ahead of parliamentary and presidential elections due in the autumn.

As results continued to come in, it appeared the PDSR, the rump of the party of former senior communists which has held power at the national level since December 1989, had won outright the contest for mayor in only one large city - Galati, a steel town in eastern Romania.

In several other large cities where no

candidate won an absolute majority, PDSR representatives did not finish among the top two candidates who will go to a run-off in the second round on June 16. In the ethnically-mixed Transylvanian city of Cluj, official results

The governing party said yesterday that it believed former tennis star Ilie Nastase would save its face in Bucharest by winning the mayoral election in the second round

showed the party - whose minority government is considered mediocre and corrupt by many Romanians - had polled just 4.3 per cent in the contest for mayor.

The incumbent, Mr Gheorghe Fimar - an extreme anti-Hungarian nationalist leader whose party is the PDSR gov-

ernment's junior coalition partner - was re-elected after winning 60.7 per cent of the vote.

The PDSR appeared to have fared better in small towns and in the countryside, home to nearly half Romania's

23m population and where the party is traditionally strongest.

The centre-right Democratic Convention (CDR), Romania's main opposition group, topped the polls in many important cities, including Bucharest. Liberal parties, once part of the Convention, and the centrist Social Democrat

Union (USD), led by Mr Petre Roman, the former prime minister, also performed well, as did a neo-communist parliamentary party.

The CDR was the main winner of the last local elections in early 1992 but later that year lost the general elections which were delayed for several months, in contravention of the constitution, to allow the PDSR's predecessor party to sort out its internal problems.

The PDSR, which did not exist in its present form at the time of the last local polls, said yesterday it still believed its candidate, Mr Ilie Nastase, the former tennis star, would win the contest for mayor of Bucharest in the second round.

The party had hoped to win the capital as well as several regional cities to boost its chances in what is expected to be a tightly contested election in the autumn.

Philip Morris launches pro-smoking campaign

By Redcliffe Cross, Consumer Industries Editor

Philip Morris, maker of Marlboro cigarettes, yesterday launched a pan-European campaign against smoking bans and other attempts to reduce "smokers' rights".

Its central claim, unveiled at a press conference in London, was that there was no statistical evidence that cigarette smoke can cause cancer in non-smokers who live and work with smokers.

"There is a constant drumbeat on the issue that my cigarette smoke is hurting you," said Mr David Greenberg, European vice-president of public affairs for Philip Morris, the world's largest cigarette

maker. An extensive newspaper advertising campaign across Europe over the next six weeks will argue that 32 of the 40 published studies on passive smoking show no significant correlation between passive smoking and increased risk of lung cancer.

Philip Morris said a study by the US Environmental Protection Agency, the report most widely quoted by the anti-smoking lobby, only found a correlation of 1.19. A factor of one equalled no increased risk.

By comparison, smokers ran a three to 22 times higher risk of contracting lung cancer than non-smokers depending on factors such as their consumption rate. Anti-smoking campaigners argued, however,

that Philip Morris's focus on lung cancer ignored the wider impact of passive smoking.

"Smokers only inhale 15 per cent of their cigarettes' smoke. The rest is in the air which equals a helluva lot of toxins," said the British Medical Association. "The real cost of passive smoking is not lung cancer but the effect on children and people with asthma."

Philip Morris's advertising blitz last year against smoking bans around Europe drew an angry response from the European Commission. The company declined to disclose the cost of the latest campaign "but we feel a responsibility and desire to speak out on behalf of 87m smokers in Europe."

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NEWS: THE AMERICAS

World's biggest carmaker plans appeal after calling Alabama court's award 'outrageous'

GM vows to fight \$150m injury award

By Richard Waters in New York

General Motors vowed yesterday to fight a \$150m damages award handed down by a jury in Alabama, one of the largest personal injury awards ever made against a US manufacturer.

The jury, in a circuit court hearing, ordered the world's biggest carmaker to pay \$50m in actual damages and \$100m in punitive damages to Mr Alex Hardy, who was severely injured five years ago when a GM sport utility vehicle he was driving crashed.

Mr Hardy claimed the accident was caused when the rear axle of his

Chevrolet Blazer broke, and that his injuries were made worse when a door latch gave way and he fell from the vehicle.

GM continued to maintain yesterday that Mr Hardy was asleep at the wheel at the time of the crash, and that the broken axle had been a result of the crash, not the cause. Also, it claimed that Mr Hardy had been thrown through the windscreen because he was not wearing a seat belt, rather than falling from the door.

The jury award comes less than a month after the US Supreme Court

overturned a punitive damages award made by another Alabama jury which had been widely held up by manufacturers as a sign of a legal system run amok. In that case, the jury had awarded \$4m in punitive damages, later reduced to \$2m, against BMW for selling a car as new after retouching its paintwork.

General Motors called the latest award "completely outrageous" and said it would appeal. It also called on lawmakers in Washington to think again about imposing national standards to govern personal injury awards.

While rejecting a complete overhaul of the tort law system, Congress recently approved a bill to limit some product liability awards. President Bill Clinton has steadfastly set his face against putting any new restrictions on jury awards.

The GM case is also likely to bring renewed pressure from manufacturers for reform of tort laws in the handful of states, including Alabama, whose juries have traditionally handed down the highest personal injury awards.

Mr Thomas Gottschalk, GM's general counsel, said Alabama "has a pattern of increasingly excessive

personal injury awards, driven largely by plaintiffs' lawyers who ignore hard evidence and play to the emotions of the jurors in a few carefully selected counties." The latest case, he said, was "the crowning example of a state tort system gone berserk."

Texas, another state known for its high personal injury awards, particularly by juries in a handful of poorer rural counties in the southern part of the state, recently passed legislation making it harder for plaintiffs to have their cases heard in jurisdictions likely to be more favourable to them.



Dole (left) and Clinton: squaring up on central election issues

Clinton, Dole line up for battle of taxes

By Jurek Martin in Washington

President Bill Clinton and Senator Bob Dole yesterday made taxation the focal point of their battle for the White House, each seeking to appeal to middle income Americans.

Mr Clinton, in a graduation speech at Princeton University, unveiled a new \$1,500 a year tax credit to help pay for tuition in the first two years of higher education. Students would have to maintain a B grade average to qualify and would lose the benefit if found to have used narcotics.

It would supplement his earlier proposed \$10,000 a year tax deduction for university fees which still languishes in Congress. The new initiative, estimated by the White House to cost \$2bn over six years, would be financed by assorted revenue means, including the reinstatement of the lapsed departure fee on international air travellers.

Mr Dole visited a building site near Richmond, Virginia, to charge that Mr Clinton's refusal to support the constitutional amendment to balance the budget amounted to a hidden "stealth" tax on all Americans.

He told a rally not to believe what the president was proposing in Princeton and said "who knows what taxes he'll increase if re-elected." He ascribed the recent increase in mortgage rates, up about 1 percentage point to over 8 per cent so far this year, to Mr Clinton's economic policies.

Both the president and the majority leader, who confirmed yesterday he would leave the Senate next Tuesday after the vote on the balanced budget amendment, are being bombarded with advice to come up with more radical tax positions.

For Mr Dole, the pressure comes mostly from rightwing Republicans keen to revive the "supply side" policies of the early Reagan administration. He recently met Mr Steve Forbes, his early primary opponent and advocate of the flat rate of income tax.

But the majority leader, is more comfortable stressing the virtues of a balanced budget and attacking Democratic "tax and spend" policies.

According to a report in yesterday's Wall Street Journal, Mr Clinton is also being advised by Mr Dick Morris, his controversial political consultant, to propose new tax cuts, mostly as a tactical means to push Mr Dole into even more radical tax positions.

But Mr Leon Panetta, White House chief of staff, and Dr Alice Rivlin, still budget director pending confirmation to the Fed Board, have urged the president to stay within existing budgetary confines.

Mr Panetta said last week it would be wrong "to engage in a bidding war on tax cuts." The greater political advantage, in this viewpoint, would be to hold the budgetary line and tempt Mr Dole into abandoning his doctrine of fiscal responsibility.

This jockeying for the tactical edge probably bemuses most Americans, according to the latest survey by the New York Times and CBS News. It found 49 per cent preferring to cut the budget deficit over lower taxes and 47 per cent favouring the other way round.

Even more to the point, only a tiny minority - 2 per cent if Mr Clinton is re-elected, 10 per cent if Mr Dole becomes president - expected their taxes to go down.

Mr Joaquin Balaguer, the conservative president retiring after dominating the country's politics for 30 years, and Mr Juan Bosch, his arch-rival and once an avowed Marxist, have ended decades of animosity in agreeing to set up a coalition aimed at stopping Mr Peña Gómez from becoming president in August.

Mr Balaguer, who founded the Reformist party, and Mr Bosch, founder of the Liberation party, both octogenarians, have announced the formation of the National Patriotic Front, a coalition which will support Mr Leonel Fernández, the Liberation party's candidate in the run-off vote.

Mr Fernández received 38 per cent of the votes in the first round, coming second to Mr Peña Gómez who got 45 per cent, not enough to give him outright victory. The failure of any candidate to get a majority forced the contest into the second round.

Mr Balaguer said he and Mr Bosch had created the coalition to support Mr Fernández, in order to ensure that the presidency does not fall into "hands which are not necessarily Dominican".

Mr Peña Gómez has frequently been the subject of racial slurs from his detractors, who stated, in clear

Argentina cracks down on tax evasion

By David Pilling in Buenos Aires

Argentina will struggle to meet fiscal targets agreed with the International Monetary Fund if it does not crack down successfully on the "national sport" of tax evasion, said Mr Domingo Cavallo, economy minister.

Launching a series of measures aimed at reducing the evasion of personal taxes, Mr Cavallo said: "We still have the levels of deficit that we had in the second half of 1994 and which grew in 1995."

There would need to be a "big increase" in collection of income and

wealth tax when returns are filed this July to help square the books, he said.

In an IMF deal reached last February, Argentina agreed to balance its budget in 1996, with an allowed deficit of up to \$2.5bn to be plugged by revenue from privatisations and the sale of concessions to manage nuclear and hydroelectric plants.

The treasury, which in the first quarter of 1996 was running a monthly deficit of nearly \$400m, is likely to miss its IMF target by \$4.5bn, according to Mr Pedro Lacoste of the

Alpha economic studio. Given an additional \$2bn shortfall at provincial level, the total deficit could reach \$6.5bn, or 2.3 per cent of gross domestic product, against 1.3 per cent in 1995, he said.

Among anti-tax-evasion measures to be adopted, Mr Cavallo said "certificates of good conduct" would be issued to those who had filed tax returns. Such certificates, which critics say would be bureaucratic and ineffective, would have to be presented when carrying out such transactions as the purchase of a house or foreign airline ticket. Those

that did not present their certificate would be investigated by the DGI internal revenue service, Mr Cavallo said.

Other measures include intensification of the so-called "information comb," a data base against which tax returns will be checked.

An inspectorate of black market labour will also be formed in an effort to incorporate the estimated 3m illegal workers into the official, tax-paying workforce.

Income tax and wealth tax only account for a fraction of the total tax

take, 70 per cent of which is made up of consumption-based taxes, principally value-added tax (VAT) which last year raised 3 points to what Mr Cavallo admitted was the "elevated" rate of 21 per cent.

Mr Cavallo said the task of reducing tax evasion was "difficult and complex" and had failed on several previous occasions.

Spectacular raids by tax inspectors had often not been backed with adequate or properly presented information of \$500m worth of tax evasion discovered, only \$50m had actually been collected.

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CONSOLIDATED BALANCE SHEET 1995	US\$m	% Change vs. 1994
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TOTAL ASSETS	34,190	+ 3.2
CUSTOMER DEPOSITS	20,000	+ 7.3
LOANS TO CUSTOMERS	15,000	+ 4.3
NET INCOME	101	+ 1.8

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SHAREHOLDERS' EQUITY	1,430	+ 5.6
TOTAL ASSETS	29,900	+ 3.4
CUSTOMER DEPOSITS	18,400	+ 7.0
LOANS TO CUSTOMERS	15,300	+ 7.7
NET INCOME	101	+ 22.1

(US\$ 1 = Lit. 1,584.73 as at 31st December 1995)

one of Italy's leading securities and stockbroking-houses, also prospered. Meanwhile, overseas, a new Representative Office in Moscow was added to those already existing in Beijing, Brussels, Hong Kong and New York, and a new office will soon be opening in Manila.

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Oil states prepare to draw Iraq back into Opec fold

By Robert Corzine in Vienna

Members of the Organisation of Petroleum Exporting Countries will begin deliberations in Vienna today on ways of bringing Iraq back into world oil markets without undermining prices.

A number of delegates who arrived in the Austrian capital yesterday were generally positive about the prospect of awarding Iraq a quota to accommodate exports that will be allowed under an oil-for-food plan agreed with the United Nations last month.

The agreement allows Iraq to sell 2bn of oil over six months. That could result in 700,000 to 800,000 or so barrels a day of Iraqi crude reaching world markets within a few months.

The positive signals even came from officials of recent Iraqi enemies such as Iran and Kuwait. One Iranian delegate said it was time the suffering of the Iraqi people be relieved. But the question being asked by many delegates yesterday was whether Iraq could be accommodated at a time of rising over-production from Opec

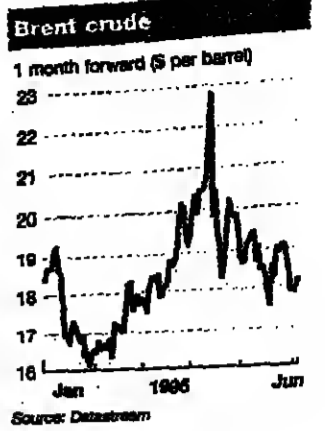
states such as Venezuela. "If you have over-production everything else is meaningless," said an Iranian official. A "meaningful" outcome from the meeting would need to include agreement on Iraq, a solution to large-scale quota cheating and a deal to apportion growth in oil demand among member states, he said. In recent days some delegates have suggested that the issue of cheating could be largely overcome by rising worldwide demand for oil. There have even been suggestions, for example, that

demand may prove strong enough not only to accommodate Iraq's partial return to the market, but also to allow for an increase in Opec's production ceiling of 24.5bn barrels a day set in September 1993. Some demand forecasts put the sustained call on Opec as high as 26m barrels a day. "The market is absorbing almost every barrel produced without any major stock build in the main consuming countries," said a Gulf Arab official this week. Iran yesterday said it, too, saw rising demand for Opec oil, although Tehran offi-

dials suggested that it would average perhaps 25m barrels a day this year. But other delegates were less certain. "To meet a price target of \$16 to \$17 a barrel for the benchmark Brent crude over the next year you simply have to cut back hard on over-production," according to a delegate from one of the larger Gulf producers. He said oil prices could weaken sharply if 700,000 barrels a day of Iraqi crude was added to the market which is already absorbing up to 1.5m barrels a day in current Opec over-production.

There also appears to be uncertainty among the group over the output potential of non-Opec producers, such as the UK and Norway. Some delegates scoff at suggestions that such countries can continue to expand capacity as rapidly as in recent years. They also wonder about the validity of forecasts which show another sharp rise in non-Opec output later this year. "Where is it supposed to be coming from?" asked one delegate. "The North Sea? It's not there. From where else? Brazil, Mexico, China? It's just not

there." The issue of Venezuelan over-production is a top priority for some countries. But it is not clear how hard Saudi Arabia, Opec's largest producer, is willing to push the issue. There has been talk among some delegations of trying to avoid a confrontation with Venezuela. "We want to avoid a conflict about quotas," said one delegate. But others appear more determined that Venezuela be forced to concede publicly that it is "cheating on its quota," something which is so far resolutely denied.



Angola's rulers wake up to their own inadequacies

Problems are not all caused by civil war, writes Michela Wrong

The sacking of Angola's cabinet and the governor of the central bank by President José Eduardo dos Santos has confirmed what most Angolans suspected: that the government in Luanda is as much to blame for their plight as Mr Jonas Savimbi, head of the Unita rebel group. In an attempt to tackle the worsening economic crisis, the president on Monday dismissed prime minister Marcelino Moco and all his ministers and suspended foreign exchange trade.

For two decades Angola has been locked in civil war and the refusal by Mr Savimbi to recognise the government's legitimacy has provided the ruling party, the formerly Marxist Popular Movement for the Liberation of Angola (MPLA), with a convenient scapegoat.

How could the economy be restructured, the politicians argued, when the war required the maintenance of a large army, when much of the interior remained cut off from the

street children begging for alms. At night, much of the city is without electricity; water supplies were halted more than a month ago.

Last year's economic performance was the most disappointing on record, with Angola logging some of the worst socio-economic indicators in the world. Inflation hit 3,700 per cent and a fifth of the population relied on aid to survive. The national currency, the kwanza, now changes hands at 220,000 to the dollar, compared to 43,000 a month ago.

The fact that such misery is not shared by all - in particular an ostentatiously wealthy political elite that has profited from exchange controls and oil dealings - now constitutes the main threat to Mr dos Santos' presidency.

Always nervous at signs of popular discontent, the president cancelled a trip to Japan last month when he heard that youths in one of Luanda's poorest areas were planning a demonstration and that anti-

Angola: legacy of the conflict years

	1992	1993	1994	1995
Population (m)	12.5	12.5	12.5	12.5
GDP growth (%)	3.3	-25.0	6.6	10
Inflation (%)	100	100	100	100

Source: Angolan government, World Bank (figures for 1995 inflation based on 1994)

capital, when thousands of refugees needed support and when the lucrative diamond-mining areas remained firmly in Unita hands?

But with the laborious peace process presided over by the United Nations showing signs of achieving lasting peace, the weaknesses of the MPLA's position and the marked absence of a "peace dividend" are becoming obvious. The government's failure to see through structural adjustment reforms, which are being introduced with some success by other African nations, has been thrown into stark relief.

Diplomats recently warned that public dissatisfaction with official corruption and mismanagement had reached levels where a civil uprising, rather than second thoughts by a fickle Unita, constituted the biggest threat to peace.

Few visiting Luanda today would guess it is the capital of Africa's second largest oil producer, an offshore asset the government has been able to tap throughout the war.

The coastal city, still graced by the elegant buildings of the Portuguese colonial era, has become a symbol of third world decay, awash with rotting garbage and swarming with crippled fighters and

government pamphlets were circulating.

Mr Fernando Franco Van Dunem, named as the new prime minister by presidential decree, now has five days to form a new government. Its mandate will be to revive reforms recommended by the International Monetary Fund and World Bank that have been repeatedly launched in the past, only to be undermined by official foot-dragging.

While Mr Van Dunem, the former speaker of parliament, is hardly regarded as a radical there are reasons to believe the attempt to move towards a free market economy will this time be embraced with more rigour.

Although the peace process is running behind schedule, at some stage this year a government of national unity, with key ministries allotted to Unita, is due to be formed. While Unita remained an out-cast rebel movement and the country was at war, the MPLA could appeal to Angolans' patriotism.

But now that Unita, which won 40 per cent of the vote in 1992 elections, is about to become a legitimate political player capable of trouncing the MPLA in future polls, the government can no longer afford a disappointing record.

Wife of jailed Nigerian leader is shot dead

The wife of Chief Moshood Abiola, the jailed Nigerian political leader, died in hospital yesterday after being shot in the head by gunmen while driving near her home, AP reports from Lagos.

There was no immediate indication of the motive for the attack. Mrs Eudirat Abiola, 44, was an outspoken critic of the military government headed by General Sani Abacha. Her husband, a millionaire businessman who was widely believed to have won the 1993 presidential poll, was jailed on a charge of treason in 1994 after he proclaimed himself president.

In London, the British government called for Gen Abacha's government to investigate the killing promptly and thoroughly.

Witnesses said the gunmen opened fire on Mrs Abiola's white Mercedes-Benz yesterday morning as she was returning from a visit to Ijebu Ode, in Ogun state, an hour's drive from Lagos.

Witnesses said the car swerved off the road, and the gunmen moved in to fire at close range. The car's windshield and back window were shot out, the witnesses added.

Mrs Abiola was reportedly detained for a few hours last month for allegedly possessing publications critical of the Abacha government. It has been under intense international pressure to release Chief Abiola and scores of other political prisoners jailed since Gen Abacha's November 1993 coup.

Forex dealers move to limit settlement risk

By George Graham in Sydney

The world's largest foreign exchange dealers have stepped up efforts to control the risk of a breakdown in the \$1,230bn of payments that flow between them every day, and hope to have a central clearing house bank fully operational in less than two years.

The Group of 20, an association of leading international banks which between them handle around 30 per cent of global foreign exchange trading, estimates the cost of setting up this clearing house

bank at \$30m, and member banks believe it will not be difficult to raise this amount.

"There will not be an issue of money. You are not going to have a problem with 20 banks getting \$30m," Mr John Reed, chairman of Citibank, a member of the G20, told 130 top executives attending the International Monetary Conference meeting in Sydney yesterday. Mr Reed said the project could be fully implemented from scratch in two years, "but there are some ways of not starting from scratch by bootstrapping on existing systems".

The G20 plan is for an instantaneous settlement system, linked to national payment systems such as the UK's CHAPS or the US Fedwire. In which a payment by one bank is immediately offset by a matching payment from another bank.

Members would have to pay money into their accounts each day, and transactions would be debited and credited throughout the day. If one member bank defaulted during the day, losses would be shared among other members. Several legal issues remain

to be resolved, but a final decision on the project is expected this summer.

Central bankers have been encouraging the private sector to come to grips with the risks involved in the foreign exchange settlement system.

Because of differences between time zones and the operating hours of national payment systems, banks often pay their side of a foreign exchange deal before they have received any payment in return, and can therefore be heavily exposed if their counterparty collapses.

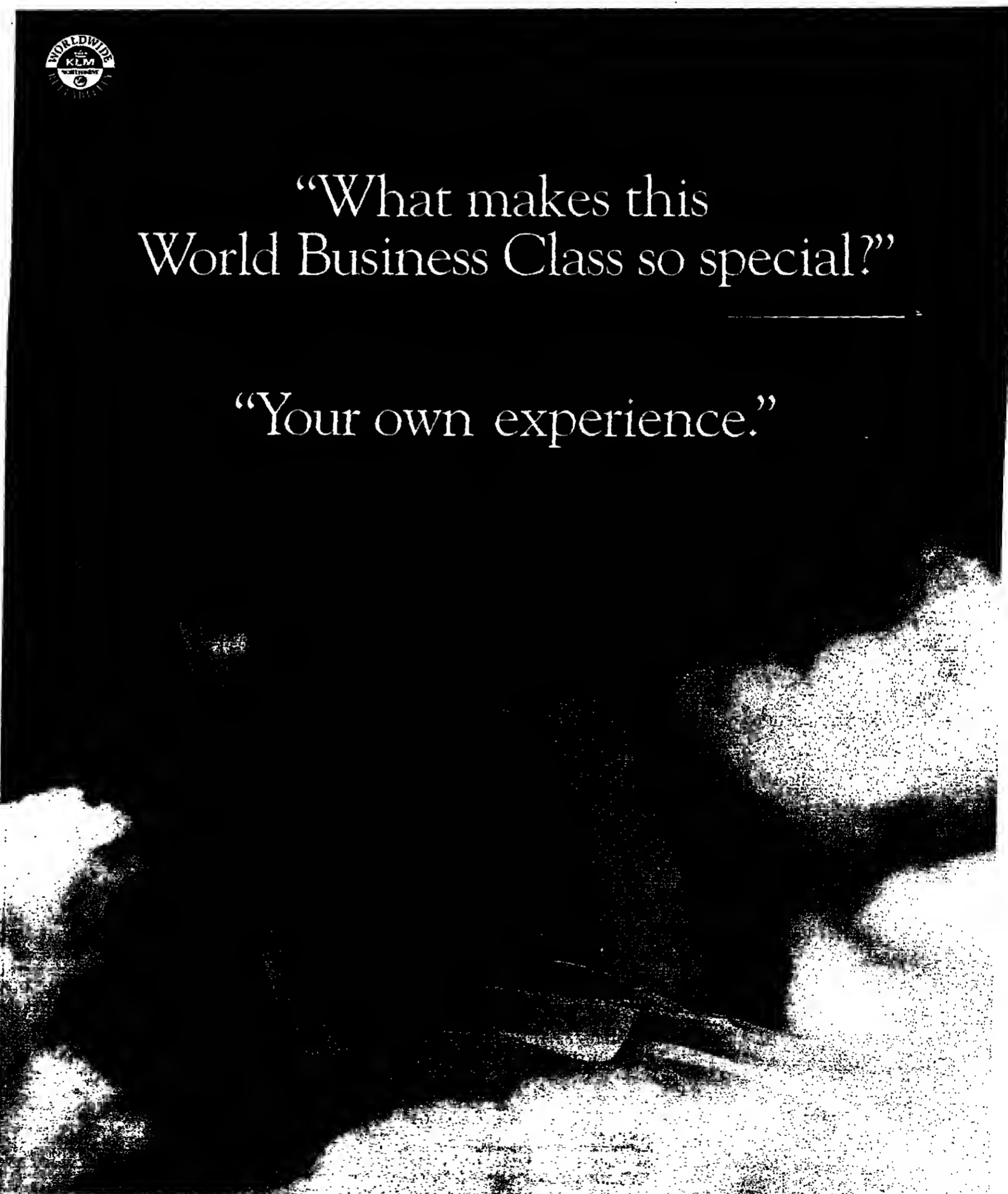
The 1974 collapse of Bankhaus Herstatt, a small Cologne bank, with \$600m of uncompleted trades sent shock waves through the financial system. Since then foreign exchange volumes have ballooned and a collapse today could be far more damaging.

Some commercial banks, however, believe the risks of a major settlement breakdown too remote to justify spending much money. Mr Peter Cooke, chairman of the world regulatory practice of the Price Waterhouse accounting firm and a former

Bank of England regulator, said yesterday that he hoped this view did not prevail.

"Bigger banks than before can probably be allowed to fail than in earlier days, but it is quite another matter to say that the international financial marketplace can tolerate a major meltdown," he said.

Mr Reed said that, while the risks were small, they were large enough to be taken very seriously by the largest banks. "The risk is not zero. It may be point zero, zero, zero, but there is a significant digit," he said.



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NEWS: ASIA-PACIFIC

Japan moves Cold comfort for war women

PM's apology clears way for compensation, writes Emiko Terazono

By Gerard Baker in Tokyo

The Japanese government once again disappointed critics of the country's bureaucracy last night with the publication of a set of half-hearted proposals aimed ostensibly at improving the conduct of monetary policy and financial supervision.

The plan, a draft document prepared by a policy committee of the ruling coalition, called for a few minor enhancements to the independence of the Bank of Japan from the powerful finance ministry. However, it was virtually silent on any plans to reform the ministry itself.

The lukewarm nature of the report suggested the move was an attempt to head off criticism of the government's handling of the country's financial crisis rather than a serious attempt at reform.

In the document, the governing parties call for the revision of a 54-year-old law which puts the central bank under finance ministry control. The most original idea was that of curbing the authority of the finance minister to dismiss senior central bank executives and supervise the bank's business. But since the law permitting such powers has never actually been exercised, revision seems unlikely to make a substantial change to the relationship between the two institutions.

Other proposals would force the central bank to report to parliament on the conduct of monetary and financial questions, and require the bank and the ministry to consult each other on monetary policy, something that largely happens already.

It was not even clear when the proposals would be put before parliament. "The coalition parties are still divided over when to submit bills for revising the Bank of Japan law to parliament, so we will finalise the proposal next week," said Mr Shigeru Ito, a lawmaker who heads a coalition task force studying the feasibility of splitting up the ministry and dispersing its authority.

Bank of Japan officials have argued fiercely in recent weeks for greater independence from the finance ministry. Mr Yasuo Matsushita, the governor, has called for a revision in the law to bring it more into line with changing conditions in the nation's economy.

Public anger at the ministry has mounted recently following the collapse of eight financial institutions and a series of allegations of corruption by ministry officials.

Most criticism has been directed at the ministry's handling of the collapse of the country's housing loan companies, bankrupt under a pile of non-performing loans.

Japan's Asia Peace National Fund for Women, a "private" reparation fund set up by the government, was last night poised to sanction a comprehensive compensation deal for 200 so-called "comfort women" who provided sexual services for the Japanese Imperial Army during the second world war.

Its move follows prime minister Ryutaro Hashimoto's announcement this week that he would apologise to "comfort women". He acted in spite of pressure from some in his own Liberal Democratic party and rightwing extremists who insist the women were volunteers.

Mr Hashimoto's decision, in effect, cleared the way for the fund to press ahead with its compensation package, which had already been delayed because of his foot-dragging.

Last month, the fund postponed a formal announcement of compensation because of the prime minister's equivocation, which has caused ill feeling among former "comfort women" and among Japanese promoters of the fund.

Mrs Mutsuko Miki, widow of former prime minister Takeo Miki and a leading campaigner for the "comfort women", resigned from her post as a fund-raiser for the fund last month after the prime minister refused then to write letters of apology on Japan's behalf.

"I was very disappointed by Mr Hashimoto's refusal to apologise and decided I could not work with him," said Mrs Miki, regarded as the conscience of the LDP, the largest ruling coalition member.



South Koreans in Seoul chant anti-Japanese slogans at one of a series of protests in recent years over 'comfort women'

The fund is likely to agree on a payment of ¥2m (\$18,500) each to the 200 women - in South Korea and other parts of Asia - though at talks late last night there was division on the figure. Compensation by the fund, which was set up by the government last summer, is already behind schedule. It was supposed to start payments by the end of last year, but the lack of funds - it has managed to collect only ¥340m - and haggling over how much should be paid to each claimant have delayed reparation.

Although the Japanese government in 1991 admitted official involvement in conscription of Korean, Dutch and Filipino women, it has maintained that its obligations were settled by the signing of peace treaties after the war.

Mrs Miki believes international treaties and apologies are separate issues. She also claims the Japanese government's denouncement of a recent report on "comfort women" by the UN Human Rights Commission, which called for direct government compensation, had also spurred her resignation.

Ironically, the departure of Mrs Miki, dubbed "Woman Prime Minister" due to her political influence during her husband's rule, seems to have helped rekindle debate and a push for a solution.

Despite this week's developments, the controversy is unlikely to go away. Members of the LDP oppose compensation because of the lack of official records on recruitment of "comfort women". Even historians' estimates of "comfort women" vary, ranging from 80,000 to 200,000. Mr Tadashi Itagaki, an LDP member, is reported to have said at a recent party meeting that wartime sex slavery was fabricated. Rightwing extremists have also campaigned against compensating former "comfort women".

Moreover, opposition over the fund has come from support groups of former "comfort women" demanding formal government compensation with an official apology. Some supporters allege Mr Bunbei Hara, the former upper house speaker who heads the compensation fund, had been responsible for destroying official papers, including those concerning "comfort women" during his days in the home affairs ministry during the war - a claim he denies.

ASIA-PACIFIC NEWS DIGEST

Malaysia growth slows to 8.3%

Malaysia's economic growth slowed to an annual rate of 8.3 per cent in the first quarter of this year amid signs that consumer spending moderated but foreign investment projects were still being approved at a fast clip.

The 8.3 per cent growth rate was down from 9.2 per cent in the preceding quarter and 10.2 per cent in the first quarter of 1995. Malaysia has forecast 1996 gross domestic product growth will be 8.3 per cent, against 9.5 per cent in 1995.

Securities analysts said it would be premature to assume that dangers of overheating have significantly receded. Such a judgment could not be made until later figures confirmed that growth is indeed slowing, they said.

Bank Negara Malaysia, the central bank, attributed the slowdown mainly to an expanded holiday period in February. However there were signs, too, that rapid consumer spending, which the government has discouraged, is easing off.

Sales and service tax collections recorded slower growth of 5 per cent and 4.4 per cent respectively, from 11.5 per cent and 18.7 per cent in the fourth quarter of 1995. Sales of passenger cars rose at 17.8 per cent, against 24.7 per cent.

The central bank said the main engines of economic growth were the manufacturing, mining, construction and services industries. It added that inflation hit an annual rate of 3.4 per cent in the first quarter, the same as for the whole 1996 year.

Despite chronic shortages of labour and annual wage rises typically of over 10 per cent for skilled personnel, approved foreign investments rose.

James Kynge, Kuala Lumpur

India sees imports surge

India recorded a \$175m trade deficit for April, the first month of India's new fiscal year, as an oil-led surge in imports outstripped disappointing export growth for the month.

Imports of \$2.96bn were 32 per cent higher than the same month a year ago, with oil and related product imports at \$772m more than 49 per cent up on April 1995.

Exports grew by 13 per cent on a year ago to \$2.8bn, according to the Indian commerce ministry's provisional estimates. April's export level a year ago of \$2.46bn then represented a growth of 24 per cent.

The April trade gap compares with a surplus of \$207m for the month in 1995, but is well below the average monthly deficit for 1995-96 fiscal year of \$376m.

The Indian commerce ministry said that non-oil imports continued to be dominated by industrial inputs and capital goods.

Mark Nicholson, New Delhi

Japan downs US attack aircraft

A Japanese navy destroyer accidentally shot down a US carrier-based military aircraft during exercises off Hawaii, but the crew of the aircraft was rescued, a Japanese defence ministry spokesman said yesterday.

The 4,200-tonne destroyer Yuguri fired its anti-aircraft gun and shot down a US Navy A-6E Intruder attack aircraft while conducting manoeuvres, the spokesman said. The two crew members of the downed Intruder were rescued by a helicopter from the Yuguri and taken to the US carrier Independence, but their condition was not known, the spokesman said.

The Yuguri was part of the Japanese navy's eight-vessel contingent taking part in RIMPAC exercises in waters near Hawaii with ships from South Korea, Chile, Australia, Canada and the US. The exercises are held once every two years.

The ministry spokesman said the Intruder was towing a target drone during the day's drills when the gunner hit the aircraft.

Reuter, Tokyo

Philippine court denies top judges took bribes

By Edward Luce in Manila

In an extraordinary move the Philippine supreme court yesterday issued a statement rebutting allegations that members of the country's highest judicial body had received bribes.

The "statement of court", made in connection with a controversial tax-related case concerning Mr Lucio Tan, chairman of Philippine Airlines, denied anonymous allegations made in a "poison pen" letter in general

circulation which suggested judges had received "lavish bribes" in exchange for a vote in Mr Tan's favour later this week.

The statement refers to an "enabling" case which would decide whether the government could press charges against Mr Tan for alleged tax evasion, which he denies. Mr Tan also denies all charges of corruption.

"The supreme court statement is a highly unusual act for it to make," said Ms Haydee Yorac, a local attorney and professor of law. "The case

has generated more controversy than any other in [the Philippines] recent history, which is why the supreme court stepped in."

The case hinges on whether the government breached Mr Tan's legal rights by launching an investigation into his tax affairs without giving him 30 days' notification.

Should the ruling go against Mr Tan, government lawyers would file a criminal prosecution against him alleging that he evaded 25bn pesos (US\$1bn) in taxes between 1990 and

1992. The government's case would be based on its contention that Mr Tan set up "ghost" marketing arms, enabling him to under-declare production costs at his tobacco and brewery subsidiaries to minimise value added tax payments.

The supreme court statement said: "That [poison pen] letter states, in essence, that three members of the court's first division were lavishly bribed by Lucio Tan." The statement describes the allegations as "malicious" and unfounded.

The development comes in the wake of a report published in Germany this week by Transparency International, a multinational organisation dedicated to curbing corruption in international business, ranking the Philippines as one of the most corrupt countries in the world.

Mr Tan, who is one of the country's leading Chinese-Filipino tycoons, owns a number of businesses, including a bank and the country's second largest brewery.

Further arrest in S Korea probe

By John Burton in Seoul

A senior South Korean finance ministry official was arrested yesterday in the country's stock market bribery scandal, but prosecutors indicated their investigation would soon be completed.

Mr Han Taek-soo, head of the Finance Ministry's treasury bureau, was accused of accepting Won50m (\$83,500) for helping Korea Data Systems to gain a listing last November in spite of the company's poor financial position.

Mr Han allegedly gave Won10m, Mr Park Won-ku, the chairman of the Securities Supervisory Board, who was arrested on Sunday on similar corruption charges.

News that the probe appeared to be at an end led to a sharp rebound in the stock market, with the general share index returning to the level it was on Sunday when the scandal broke.

The bourse had been shaken by allegations that government officials had accepted bribes for granting approval of list-

ings on the Seoul exchange.

More than 30 companies are waiting to issue initial share offerings on the Seoul bourse. However, the government has strictly limited the number of new share issues in order to prevent a surplus of listings from depressing share prices.

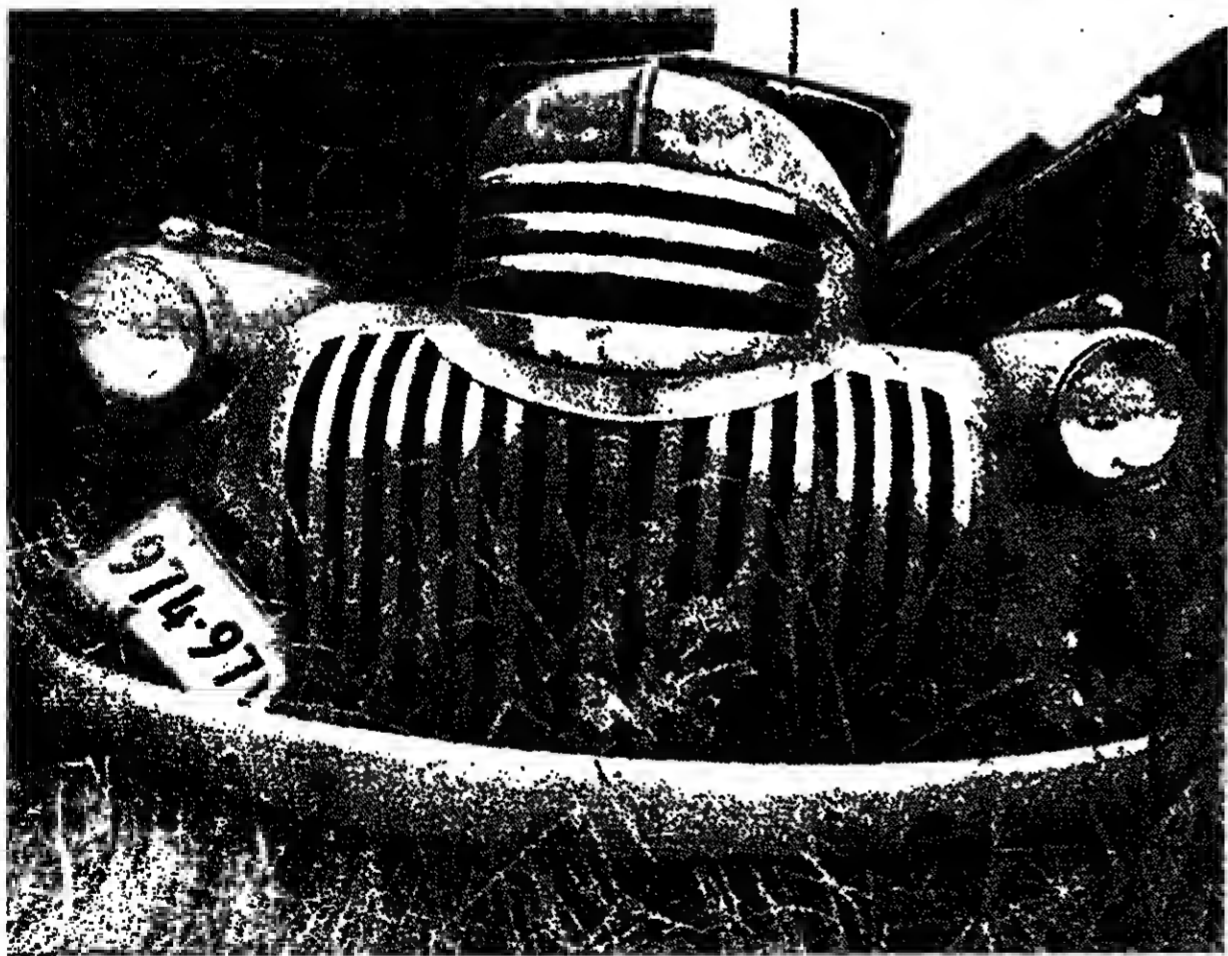
The companies involved in the bribery scandal are believed to be mainly small concerns which desperately need to raise capital from the stock market or else face financial problems.

Prosecutors said that they

might investigate two or three other officials, but otherwise no further arrests are expected to be made.

President Kim Young-sam blamed vague procedures governing stock listings for the scandal and ordered that more transparent rules be introduced.

But analysts believe that the government wants to limit the extent of the investigation because of fears it could disrupt an already fragile market worried about a growing trade gap and sluggish exports.



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Mr Ma takes on Taiwan's 'deep culture of corruption'

Laura Tyson on the popular justice minister with an unpopular brief

At a dinner party, Taiwan's justice minister was reminiscing with legislators about the country's parliamentary elections last December. One thanked him for cracking down on the once widespread practice of vote-buying. "Mr Ma, you saved me \$7100m (US\$8.8m)," he said. Another leaned across the table and said: "Mr Ma, you saved me \$2300m!"

Not everyone is so appreciative of Mr Ma Ying-jeou, the 46-year-old Harvard law school graduate who tops ratings among government officials in public opinion polls. When he first took over the ministry in 1993, he was pitted. Now he is feared.

"I think our investigators and prosecutors have really done their job," he said in an interview. "And in doing so, our ministry and myself have created a lot of enemies and they seek my departure as minister."

Mr Ma vows to change what he calls Taiwan's "deep-rooted corruption culture". He says he wants to make corruption merely "a fact of life, not a way of life". During his three-year tenure, he successfully took on electoral bribery and drugs, which led to thousands of convictions and a substantial reduction in such crimes. Voter turnout was down 5 per cent in the last parliamentary elections, considered a sign that candidates had cut back on *zou lu gang* to voters - a "fee" just for walking to the

polling booth. And illegal amphetamine labs have transferred their operations from Taiwan to China, driving the local price so high most users have been priced out of the market.

Using these campaigns as a blueprint, he has now mapped out a strategy to tackle organised crime - a mission which has struck a little too close to home for his own ruling Nationalist party. "Taiwan must undergo a major transformation in this regard in the next few years, otherwise we

who once ranked just behind a local movie star and a Cantonese pop star in a survey asking Taiwanese women whom they found most attractive, out of the limelight. Still others are politicians, powerful businessmen and underworld figures.

"Members of the underworld have become elected representatives of our government, at the local, provincial and national levels. This is a problem that is well known to our citizens," said Mr Ma. "A thorough house-cleaning is vital to regain the trust of our people."

The scourge of vote buying and drug traders wants corruption to be just 'a fact of life, not a way of life'

cannot say we are a truly democratic society in which the rule of law is respected," Mr Ma said. "If we don't clean up our society, I argue we will lose our competitiveness."

The economics minister, Mr Chiang Pin-kung, recently admitted corruption was a drag on the economy. Whether Mr Ma is disappointed in a cabinet reshuffle expected this week will be a crucial test of how serious Taiwan's first democratically elected president, Mr Lee Teng-hui, and the Nationalists are about stamping it out.

Some of Mr Ma's enemies are senior members of his own party. Others are political rivals who want to push the photogenic cabinet minister,

Mr Ma is dissatisfied with police response to crimes related to the so-called triads, or organised crime groups. "The current campaign by police against the underworld seems to have been confined to small potatoes - the cases that can easily show their performance. But they do not target big shots," he said.

He has proposed to the ruling party a comprehensive strategy of attack involving both legal and operational measures. "In the next 19 months, we will have no elections. That is a good opportunity for us to get the necessary laws passed and to take vigorous action to clean up this society. This is a critical moment," he said.

Public confidence in law enforcement and the integrity of government officials has fallen sharply recently in the wake of a spate of controversies highlighting gangster influence in politics. One was a bid-rigging scheme allegedly involving the Bamboo Union Gang, one of Taiwan's biggest triads, in an airport expansion project. An executive of a leading Nationalist-run company and four parliamentary legislators including the Nationalist party whip are among those being investigated.

Gangs have become increasingly public in their activities. At the February funeral of the assassinated leader of the Four Seas Gang, an estimated 10,000 gangsters joined a funeral procession across the capital. Numerous senior politicians attended or sent condolences.

"Here, the underworld has been more involved in public construction projects than in drugs, which is unique," Mr Ma said. "Public construction projects usually involve large sums of money, so they are as lucrative as or more so than drug trafficking."

First, he says, laws must be changed to make the formation of, and participation in, an organised crime organisation itself a crime.

Next, the government should carry out an island-wide swoop. "We should do it in one shot, on a national scale, so they don't have time to conceal their illegal activities... and it should be aimed at the big shots," Mr Ma said.

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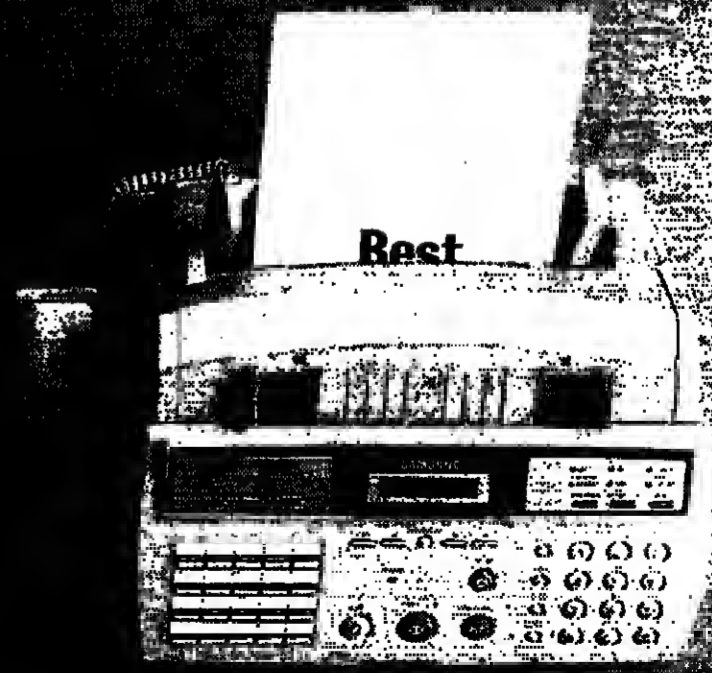
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NEWS: WORLD TRADE

WORLD TRADE NEWS DIGEST

Toll-free calls go worldwide

Businesses offering freephone services will be able to register a single worldwide "toll-free" number from early next year, valid for all countries and telecom carriers. The new system, to be operated by the International Telecommunication Union in Geneva, is expected to boost the growth of freephone operations, especially in Europe and the Asia-Pacific region where the need to register a separate freephone number in each country has hampered development.

Freephone facilities, which charge the cost of calls to the recipient, are used by businesses to promote their services or encourage telephone orders for their products. In the US, where the service was pioneered in 1966, freephone numbers attract around 100m calls a day and turn over \$100bn worth of business each year. US companies hold around 90 per cent of the world's 5m freephone numbers.

The ITU will maintain a global registry of international freephone numbers allocated on a first-come first-served basis from early next year. Numbers will have an international prefix (such as 00) followed by 800 - the agreed international freephone code - and an 8-digit global subscriber number.

Frances Williams, Geneva

Vietnam picks airport shortlist

Vietnam has shortlisted three foreign companies for a contract valued at about \$180m to upgrade Vietnam's busiest airport, Tan Son Nhut in the southern industrial centre of Ho Chi Minh City. The companies are Japan's Maeda Group, Dywidag-Excavomill of Germany, and Airport Group International of the US. The project involves building a new terminal able to handle up to 10m passengers a year.

Two other bids, one by a Saudi-British consortium including UK construction engineers Balfour Beatty and another by a second US group, were rejected. Industry officials said the Saudi-British package failed as it required the Vietnamese government to borrow the entire project amount on commercial terms, whereas the others involved joint ventures with foreign equity input.

Jeremy Grant, Hanoi

Dynamic Singapore is praised

Singapore's "dynamic and open" economy won praise yesterday from trading partners in the World Trade Organisation, just a week after the city state was rated the world's most competitive country by the World Economic Forum. A report by the WTO secretariat on Singapore's trade policies and practices attributes its rapid economic development to open trade, prudent economic management and its location in the centre of one of the world's fastest growing regional markets.

"With its political stability, well developed infrastructure, high savings rates and ample foreign investment, Singapore is one of the world's strongest economies," the WTO report says.

The report notes Singapore is increasingly an economy based on services, which account for more than 60 per cent of GDP. Finance, transport, telecoms and tourism have expanded rapidly, one reason why Singapore is under pressure from the US and other western nations to go further in liberalising these sectors, especially financial services. Industrial tariffs are due to fall over the next few years from an average of 12.4 per cent to 5.1 per cent.

Frances Williams, Geneva

Honda has started building its \$100m car plant near São Paulo in Brazil. Japan's third-biggest carmaker aims to make about 30,000 Civic models a year by 1999 for sale throughout South America.

Haip Simanin, Motor Industry Correspondent

BAe wins Kuwaiti missile contract

By Bernard Gray, Defence Correspondent

British Aerospace has beaten Aerospatiale of France to an order for \$100m of anti-ship missiles to equip Kuwait's new fast patrol craft. The order is a significant victory for the British defence company, since the Sea Skua missile will be fitted to a French-built ship for the first time and overturns expectations that Aerospatiale would win the order.

Sea Skua impressed the Kuwaiti authorities during the Gulf war by sinking Iraqi shipping after being fired from Royal Navy Lynx helicopters on patrol in the Gulf. Of 26 missiles fired, 19 scored hits and 15 ships were sunk.

A combination of combat-proven performance and price seems to have won the order for BAe. The contest was keenly fought between the two potential suppliers, with the prime ministers of both countries lobbying heavily for the contract.

Sea Skua was originally developed as a helicopter-launched light anti-ship missile with a range of about 15km, and is in use in that role with six navies, including Britain's Royal Navy. BAe has invested in adapting the missile for launching from light patrol craft. These are not large enough to house traditional anti-ship missiles, such as the French Exocet or the US Harpoon.

Now Sea Skua has broken into this surface-launch market, it may be in contention for other orders. Fast patrol craft are in use in a number of Gulf and Pacific Rim countries with expanding navies.

The order comes as confidence in the Gulf arms market is picking up. Following a rush of orders after the Gulf war there has been a lull. But improvements in the oil price and concerns about potential threats from Iran have renewed interest in weaponry.

BAe said last night it was confident it had won the order but that it had not yet received a contract.

European rocket's dominance of world launch industry now at risk

Explosion shatters Ariane's hopes

By Michael Skopinko, David Owen and Clive Cookson

Investigators will need time to discover the precise cause of yesterday's failure of the maiden Ariane 5 flight over French Guiana. But the blow to the morale and prestige of the European space industry is immediately clear.

An explosion in the international satellite industry is nothing new or, in the long run, necessarily damaging. In 1994, ArianeSpace, the French-based 38-company consortium behind yesterday's launch, suffered two crashes. It still managed to retain its position as the world's leading satellite launcher, with about half the market.

The real blow from yesterday's crash is that it was Ariane 5 which failed. The new launcher is central to Europe's drive to continue its leadership of the satellite launching industry into the 21st century against competition from the Americans, the Russians and the Chinese.

Ariane 5 stood for European, and particularly French, pre-eminence in an industry once dominated by the US. Last year, more than 12,000 people visited "Ariane City", the Ariane 5 production facility on the banks of the Seine.

Ariane 5, which cost \$70m to develop, offered satellite-launching customers lower costs, a larger payload, and - ArianeSpace said - greater reliability. Mr Francis Avanzi,



ArianeSpace's chief operating officer, said earlier this year that the consortium wanted to launch three Ariane 5 rockets next year, four in 1996 and five or six in 1997.

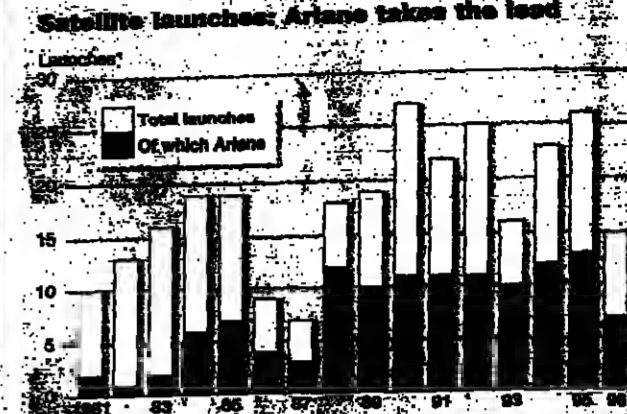
At the end of the century, launches of the existing Ariane 4 rocket would cease and production of Ariane 5 would increase to eight a year. Ariane 5 was designed to launch two satellites with a combined weight of 5.9 tonnes or one weighing 6.5 tonnes. Ariane 4, with a payload of 4.8 tonnes, was becoming insufficient now that the average telecommunications satellite weighs three tonnes.

ArianeSpace said that Ariane 5 was a radically new design. The heart of Ariane 5 is a gigantic new "cryogenic" main stage rocket, which burns 26

tonnes of liquid hydrogen in 120 tonnes of liquid oxygen, during its 10-minute burn time. Adding thrust to the main stage are a pair of new solid-fuel boosters - 26 times larger than their counterparts in Ariane 4. Each one burns 237 tonnes of hydrocarbon fuel for two minutes after lift-off.

Ironically, Ariane 5 was designed to be much more reliable than its predecessors, because it was originally expected to lift not only communications satellites but also people into orbit.

It is a simpler design than Ariane 4, with fewer engines, and - for the first time - its main stage can be fired and tested on the ground to ensure that it is working perfectly before lift-off. One of the main consequences of yesterday's



HIGH HOPES: The Ariane 5 launcher, pictured left, after its roll-out in Kourou, French Guiana, in April

accident is that the two-year lead that ArianeSpace hoped to have before the arrival of a string of potentially tough new competitors will be truncated.

The newest challenger to ArianeSpace is International Launch Services, a joint venture formed by Lockheed Martin, the US defence group, and two Russian companies - Khromuchev Enterprise and RSC Energia.

Lockheed Martin makes the Atlas launcher, 11 of which were launched successfully from Florida last year. The Russian companies offer the larger Proton rocket. By joining forces, the new alliance hopes to market both launchers around the world.

McDonnell Douglas, the US aerospace company, is developing the Delta III, a rocket sim-

ilar in size to the Atlas. The first launch is planned for 1998. Boeing, the largest US aircraft maker, has teamed up with Russia's RSC Energia, Kvaerner of Norway and NPO-Yuzhnoye of Ukraine to launch satellites from a platform in international waters in the Pacific.

But Mr Stéphane Chenard, senior space analyst with Euroconsult, the Paris-based consulting firm, said the extent of the setback to Europe's space operations should not be overstated. "There will be some delay in the programme, some more money will have to be spent, but everyone knows it will work eventually," he said. "People hardly remember today that the second and fifth Ariane 1's blew up. These things happen."

Scientists aghast as 10 years' work is lost

By Clive Cookson, Science Editor

The explosion of Ariane 5 is a setback not only for Europe's commercial satellite launching programme but also for space science. The \$500m Cluster mission to study the effects of the "solar wind" on the earth's atmosphere and magnetic field - causing effects ranging from the beautiful Northern lights to magnetic storms that disrupt radio communications.

Ariane 5's maiden flight was intended to launch a small flotilla of four identical spacecraft, the Cluster craft, to fly around the earth in a tetra-

dral or pyramidal formation. They would have provided scientists with their first three-dimensional view of the solar wind. This stream of electrically charged particles from the sun has a profound effect on the earth, its atmosphere and magnetic field - causing effects ranging from the beautiful Northern lights to magnetic storms that disrupt radio communications.

There was no back-up to Cluster. As Mr John Crelland, the European Space Agency's

Cluster project director, said before launch: "We are putting all our eggs in one basket."

Mr Crelland said yesterday, after the explosion, that there was no insurance because Cluster was an experimental scientific mission on Ariane 5's maiden launch, rather than a commercial satellite.


Scientists, some of whom had devoted almost 10 years to Cluster experiments, were devastated. In the UK, where 245m of scarce government research grants had been spent on Clus-

ter, a group of 50 space scientists saw the disaster on a live video link from French Guiana to the Rutherford Appleton Laboratory in Oxfordshire.

"When it happened, there was a shell-shocked silence for at least two minutes," said one of those present, Mr Nick Flowers of the Mullard Space Science Laboratory, part of University College London. "The feeling of loss is great."

His colleague Professor Alan Johnstone said: "It cannot be repeated. There is no prospect

now, even if the money could be found, of turning round and doing it again. We are just going to have to grin and bear it." He denied that it was foolhardy to risk such an important mission on the maiden flight of a new rocket. "There is always a certain amount of risk attached to these sort of programmes," said Prof Johnstone. "Yes, it was a new vehicle, but we knew that it was going to be very carefully engineered and thoroughly tested, which it was."



APV RT.
HUNGARIAN PRIVATISATION
AND STATE HOLDING COMPANY

INVITATION TO BID

The Hungarian Privatisation and State Holding Company (Gerecliafter Callor or APV Rt.) invites a one round open tender for the purchase of the state-owned registered shares guaranteeing equal shareholders' rights representing 91.58 percent ownership share with par value of HUF 732,603,000 of Bakony Fűszért Rt. (Gerecliafter: Company) / 8000 Székesfehérvár, 5066 Repülőkör, (Trade Registry no.: 07-10-001034/04) established under Act XIII. of 1989.

Registered capital of the Company:	HUF	800,000,000	
Equity of the Company:	HUF	1,219,455,000	

Ownership structure:

APV Rt.	HUF	739,810,000	92.48 percent
Dominancia Vátió Kft.	HUF	40,000,000	5.00 percent
Local governments	HUF	20,190,000	2.52 percent

2. Bids can only be submitted for the whole share package.
3. Bids shall be submitted to the address specified below in a closed unmarked envelope in five copies in Hungarian. Foreign bidders are allowed to submit their bids also in English or in German, but even in this case the Hungarian version will rule. Bids shall be submitted in person or by a proxy in the presence of a notary public within the specified time. The following text must be written on the envelope:
„PÁLYÁZAT: BAKONY FŰSZÉRT RT.”
4. The bidder shall mark the original copy with the inscription „EREDETI”. If the bidder fails to do this, the Callor will choose one from the copies submitted which further on will function as the original. Should there be any discrepancies among the copies the copy so marked shall rule.
5. Deadline for submissions: August 28, 1996, between 12.00 and 14.00 hours
Place of submissions:
APV Rt.,
R-1133 Budapest, Üpestér rkp. 31-33,
8th floor, room 807
6. At least 90 percent of the purchase price is to be paid in cash, the remaining sum can also be paid by cash or compensation coupons. The deadline for the payment in full of the purchase price cannot be longer than 30 days. The Callor will not accept deferred payment or payment in instalments.

Foreigners can only bid in currencies accepted as convertible by the National Bank of Hungary (MNB), taken into account by the Callor at the effective foreign exchange purchase rate officially published by MNB at the time of the submission deadline. Neither foreign private individuals, nor economic associations in majority foreign ownership registered in Hungary are allowed to pay in compensation coupons. Foreigners can only use compensation coupons acquired in their own right. Compensation coupons are taken into account by the Callor at a rate of 174.2%.

7. Bidders shall undertake to maintain their bids for 120 (one hundred and twenty) days from the submission deadline.
8. To prove their intention to purchase bidders shall pay or transfer HUF 10,000,000 (ten million) as retention money until the submission deadline to the account opened for this purpose by APV Rt. with MKB (Hungarian Foreign Trade Bank) specified in the detailed tender invitation. The Callor shall dispose of this sum in line with the rules on retention money.
9. Following the evaluation the final decision is taken by the Callor. The Callor reserves the right to declare the tender unsuccessful.
10. The detailed tender invitation and the information memorandum containing the most important economic data from the point of view of the bid prepared by the Company constitute an integral part of the present tender invitation. The purchase of the information memorandum, including also the detailed tender invitation for HUF 20,000 + VAT at the Customer Service of APV Rt. against a declaration of confidentiality is subject to submitting the bids. The tender documents are to be purchased by the bidder (in case of a consortium, by one of the members) personally or through a proxy directly from the Callor, which the Callor shall attest by issuing a certificate.
11. Information on the tender, as well as on the major data and characteristics of the Company can be obtained from:
Information concerning the Company:
CEO Mr. István Nagy on the premises of the Company
Tel.: (36-22) 316-410
Information concerning the tender:
Portfolio manager Mrs. Both, Zsuzsa Keilner
Address: APV Rt.
Tel.: (36-1) 269-8600, ext.: 2193

Investment flows surge to record

By Frances Williams in Geneva

Worldwide flows of foreign direct investment soared by 46 per cent last year to a record \$325bn from \$222bn in 1994, according to preliminary estimates by the United Nations Conference on Trade and Development.

Recovery from recession and a new wave of cross-border mergers and acquisitions boosted inflows of foreign direct investment (FDI) to industrialised countries to \$215bn in 1995 from \$130bn the previous year. The US led the way with record inflows and outflows of \$75bn and \$97bn respectively, compared with \$65bn and \$60bn in 1994.

Inflows to developing countries also climbed, though less steeply, to an all-time high in 1995 of \$97bn from \$96bn in 1994. China again accounted for the lion's share, attracting inward investment of \$38bn last year against \$34bn the year before. FDI flows to central and eastern Europe doubled to an estimated \$12bn last year.

Releasing the figures yesterday ahead of publication of its annual World Investment Report this summer, Unctad says the surge in FDI reflected recovery from economic recession earlier in the decade underpinned by global competitive pressures.

These pressures were pushing all companies, including a growing number of transnational companies (TNCs) based in developing countries, to become more active internationally through FDI or other means. "The unprecedented level of global FDI flows in 1995 suggests that the speed of globalisation of production by TNCs may be accelerating," Unctad adds.

In particular, a resurgence of activity involving cross-border mergers and acquisitions (M&As) had boosted outward investment on both sides of the Atlantic.

Outflows from Germany, such as those from the US, more than doubled from \$14.5bn in 1994 to \$35.5bn in 1995. Outward investment from Britain rose by half from \$25.5bn to \$37.5bn.

While there were a number of large-scale M&As in the pharmaceuticals, chemicals and financial services industries that marked a process of consolidation in industrialised countries, many small and medium-sized enterprises had also entered the M&A market, according to Unctad.

Unlike the previous M&A boom in the late 1980s, fuelled by the prospect of financial advantage, recent M&A activity was aimed at strengthening companies' "core competencies", Unctad suggests.

US vows to quit shipping talks

By Frances Williams in Geneva

The US yesterday said it had no intention of reversing its earlier decision to withdraw from multilateral talks on liberalising international shipping.

US negotiators at the World Trade Organisation in Geneva rejected as inadequate a comprehensive package of market-opening proposals presented yesterday by the European Union and 23 other countries representing most of the important maritime nations in the WTO.

Washington said last month that it would not be submitting a liberalisation offer in the talks, which are due to end on June 30, thereby threatening them with collapse. However, the EU and other trading partners had hoped to persuade the US to reconsider its position by putting together a tempting package.

Mr Hans Bessler, the EU's chief trade negotiator, said the package would substantially improve access to maritime services markets and included commitments on liberalising multimodal (door-to-door) transport services, which the US had demanded.

But after the meeting, Mr Andrew Stoler, deputy US ambassador to the WTO, said: "What is on the table from the others doesn't represent a substantial opening of market access and is no basis for the US to table an offer."

Negotiators are scheduled to meet again on June 17. Washington has been given until June 14 to decide on its response, but if a US offer is not forthcoming the package on the table also lapses.

The 42 participants in the talks (the EU counting as one) have deliberately avoided discussing what should happen to the negotiations if the US stays out of a multilateral deal. However, both Canada and the US said yesterday that perhaps now was the time to start considering the options.

These include trying to reach an accord without the US, as in the financial services negotiations last year, postponing the deadline, as in the telecoms talks in April, coming to an agreement outside the WTO among like-minded countries; or simply letting the liberalisation effort drop.

Mr Bessler said yesterday that a deal in maritime services was important for the credibility of the WTO and the multilateral trading system.

US negotiators have long admitted privately that their room for manoeuvre was restricted by the difficulty of persuading small but powerful maritime unions to accept a global liberalisation deal in a US presidential election year.

Agreement on car-factory sale and refit helps to ward off job losses

Portugal strikes Renault plant deal

By Peter Wise in Lisbon

Portugal is abandoning a \$580m (\$380m) claim for damages against Renault following agreement over the future of a Portuguese plant which the French vehicle manufacturer had threatened to close with the loss of 760 jobs.

Under the terms of an accord signed yesterday, Portugal is to pay FF736m (\$6.8m) to acquire Renault's 70 per cent holding in the plant at Setúbal, 50km south of Lisbon, which it plans to modernise and sell to another international vehicle manufacturer. Mr Augusto Mateus, Portugal's economy minister, said yesterday that negotiations had begun with groups from Asia and the US

on the possible purchase of the Setúbal plant, which makes Cacia cars. Portuguese newspapers said the companies included Chrysler of the US.

Renault is to contribute FF768m to the cost of re-equipping the plant, in addition to a maximum of FF87m if the change involves any job losses. Renault also guarantees to support the manufacture of Clicos in Setúbal until July 1998. Production is to be at a rate of 110 cars a day until a further review next March.

The French group is to pay a further FF736m to acquire the Portuguese state's minority holdings in its other operations in Portugal, including 30 per cent stakes in its commercial network and in a component

plant at Cacia. Renault will also invest in equipping the Cacia plant, whose output includes gear boxes and C&G engines for the Twingo car, to produce more sophisticated components. This will create 180 new jobs in 1997. Renault's investments in Setúbal and Cacia are to be supported with incentives from Portugal.

"This agreement is a guarantee that Renault will maintain a sustained, competitive presence in Portugal," Mr Louis Schweitzer, Renault's president, said.

The deal marks a success for Portugal's socialist government, which made reaching a mutually beneficial settlement with Renault a priority when it came to office six months ago.

Talks between Renault and the previous centre-right government broke down last September after the French group refused to back down on a plan to close the Setúbal plant because of excess production and falling consumer demand for the Clio.

Portugal argued that Renault had undertaken to keep the plant operating indefinitely when it signed an investment contract in 1977 and had received more than \$400m in investment incentives as well as making \$250m in profit in the 13 years to 1993.

The damages claim lodged with the international arbitration tribunal in Geneva is now being dropped by mutual consent of the two parties.

SECOND-HAND TOBACCO SMOKE IN PERSPECTIVE

Is everything bad for us? Or are we getting things out of proportion?

Almost every day, it seems that one thing or another has been discovered to be some kind of health risk.

In one scientific study, even the ordinary biscuit was linked to heart disease.

But as common sense suggests (and scientists confirm) not everything described statistically as a risk is a meaningful risk.

For example, lots of people have been persuaded that second-hand tobacco smoke is harmful.

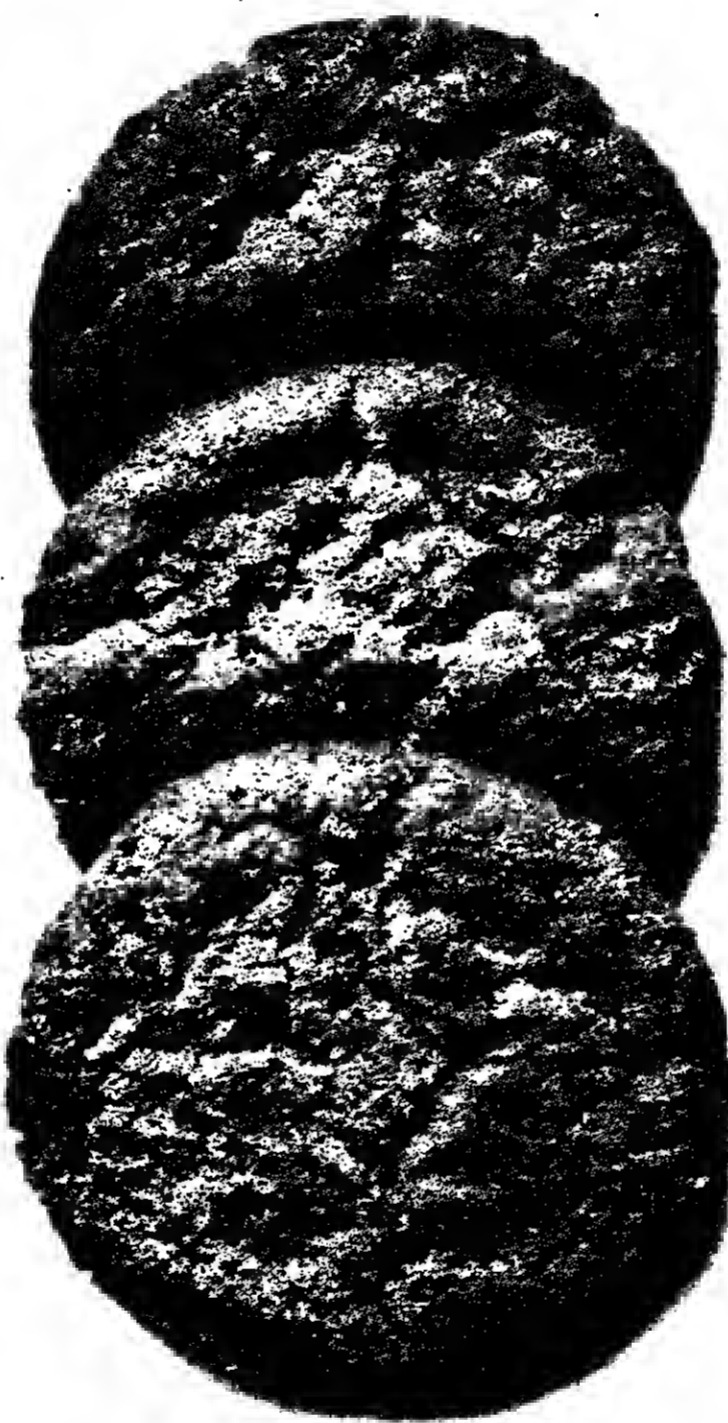
Not surprising, perhaps.

After all, we recognise that smoking itself is a risk factor for certain human diseases and that some people find second-hand tobacco smoke unappealing and unpleasant.

But what about second-hand tobacco smoke? Is it really a meaningful health risk to people who've chosen not to smoke?

Not, we think, if you look at the evidence.

The United States Environmental Protection Agency recently conducted a major review of studies on the risks of second-hand tobacco smoke to non-smokers. These studies typically involve non-smokers living with smokers over a long period, such as 20 years.



And this review put the risk of lung cancer from second-hand tobacco smoke at a level well below the risk reported by other studies for many everyday items and activities.

And below, in fact, the risk to health that one other study reported for eating one biscuit a day.

As the table below shows, many everyday activities have been statistically associated at one time or another with apparent risks to health.

But reputable scientists say that weak associations aren't necessarily meaningful.

So there's no big campaign to persuade you to give up your daily biscuit.

Nor is there any sound justification for a campaign against second-hand tobacco smoke.

If you'd like to decide for yourself, please write to us at Philip Morris Europe S.A., c/o P.O. Box 107, 1000 AC Amsterdam, The Netherlands or fax us on 00 31 20 671 98 89.

We'll send you the evidence about second-hand smoke.

We believe you'll find the case convincing.

Everyday Activities	Reported Relative Risk*	Reported Health Effect	Scientific Study Reference
Diet highest in saturated fat	6.14	Lung cancer	Journal of the National Cancer Institute, Vol. 85, p.1906 (1993)
Non-vegetarian v vegetarian diet	3.08	Heart disease	American Journal of Clinical Nutrition, Vol. 31, p. S191 (1978)
Frequently cooking with rapeseed oil	2.80	Lung cancer	International Journal of Cancer, Vol. 40, p. 604 (1987)
Drinking 1-2 glasses of whole milk per day	1.62	Lung cancer	International Journal of Cancer, Vol. 43, p. 608 (1989)
Eating one biscuit a day	1.49	Heart disease	Lancet, Vol. 341, p. 581 (1993)
Drinking chlorinated water	1.38	Rectal cancer	American Journal of Public Health, Vol. 82, p. 955 (1992)
Eating pepper frequently	1.30	Mortality	American Journal of Epidemiology, Vol. 119, p. 775 (1984)
Exposure to second-hand tobacco smoke	1.19	Lung cancer	U.S. Environmental Protection Agency (1992)
High vegetable diet	0.37	Lung cancer	International Journal of Epidemiology, Vol. 25, Suppl. 1, p. 32 (1996)
High fruit diet	0.31	Lung cancer	American Journal of Epidemiology, Vol. 133, p. 683 (1991)

*Relative risk measures how much consuming, or being exposed to something, raises or lowers risk.

Philip Morris Europe S.A.

Second-hand tobacco smoke. Let's keep a sense of perspective.

NEWS: UK

'Shareholders are getting less as employees are getting more,' says chairman of Barclays

Bank chief criticises pay for top traders

By George Graham in Sydney

Banks are storing up trouble by paying their high-flying traders too much and their shareholders too little, one of Britain's leading bankers warned yesterday.

Mr Andrew Buxton, chairman of Barclays Bank, said retail banks were making so much money that they "may be tempted to throw money at employees in the belief that they are investing in the future".

Mr Buxton issued his warning in a speech in Sydney to the International Monetary Conference, a gathering of 150 top executives from some of the world's largest commercial and investment banks.

Mr Buxton said he could understand guaranteeing bonuses for the first year, a practice which had now become prevalent, but was opposed to guarantees over two or three years.

London investment bankers. "I would start to worry when the returns wouldn't be there," he said.

"If you want to work in Rome, do as the Romans do," he said, adding that "quite spectacular" growth rates made high salaries easier to swallow.

The 'mad cow' crisis: British government tactic brings EU ministers' meeting to a halt

Foreign secretary cautious about early end to curbs

Financial Times reporters in Brussels, Luxembourg and London

Mr Malcolm Rifkind, UK foreign secretary, yesterday damped hopes of a deal to lift the worldwide ban on British beef products before the European summit in Florence on June 21.

Failure to reach agreement would prolong Britain's policy of non-co-operation on EU business launched in an effort to secure early agreement on lifting the ban.

The European Commission is also dismayed that its efforts to broker a deal were being undermined by Britain's non-co-operation policy, especially as the 110-20-member Commission was expected to decide today to lift the ban on three British beef by-products.

Mr Franz Fischler, EU agriculture commissioner, warned that the timing of the lifting of the ban on derivatives was "up to Britain".

Ministry of Agriculture officials in London said last night Britain would move fast to implement any conditions agreed with the EU to facilitate

a staged lifting of the ban. "We are not being bloody minded - we are prepared to compromise to meet their concerns," one official said.

Mr John Major, the prime minister, told MPs in London yesterday he was looking for "early dates" for the beginning of a staged lifting of the beef export ban.

In its most concerted disruption campaign yet the UK yesterday blocked 10 decisions - including several that had actively supported - at a meeting of justice and home affairs ministers in Luxembourg.

Mr Rifkind, launching a diplomatic offensive in European capitals, said yesterday before meeting Mr Jacques Santer, European Commission president, that reaching a framework agreement before the Florence summit was a "desirable" timetable, but not "crucial".

Mr Fischler said the terms of the framework agreement



British foreign secretary Malcolm Rifkind was guardedly optimistic about the beef deadlock after he had met German chancellor Helmut Kohl at a Nato meeting in Berlin.

sought by the UK for a step-by-step lifting of the embargo would have to be approved by the standing veterinary committee which two weeks ago voted against easing the ban on beef derivatives.

A Commission spokesman said talks yesterday between Mr Rifkind, Mr Douglas Hogg, the British agriculture minister, Mr Santer and Mr Fischler

had been "constructive". The two sides were "on a path towards a strategy for a step-by-step lifting of the ban."

The cautious British tone followed the failure of European ministers to agree on a European Commission proposal to ease the ban on gelatin, tallow and bull semen.

British relief that the European Commission could lift the ban was tempered by knowledge that six countries - Germany, Austria, Portugal, the Netherlands, Belgium and Luxembourg - remained opposed.

In Luxembourg yesterday, the justice and home affairs ministers' meeting was brought to a standstill as all 14 decisions require unanimity.

Beef consumption well below pre-BSE levels

EU beef consumption

Country	% change since March 20 when possible BSE-CJD risk admitted	
	April 29	March 25
UK	-30	-37
Ireland	-30	-37
France	-30	-37
Germany	-30	-37
Netherlands	-30	-37
Italy	-30	-37
Spain	-30	-37
Denmark	-30	-37
Sweden	-30	-37

By Caroline Southey in Luxembourg

European Union farm ministers yesterday attacked as inadequate European Commission plans to pay aid to farmers for losses caused by sharp falls in beef prices and consumption following the scare over "mad cow" disease.

The latest figures show that beef consumption in many EU countries is still well below levels before the "mad cow" crisis broke in March when the British government announced a possible link between BSE

and a fatal human brain condition.

Yet consumption has improved since the sharp falls in the first week of the crisis, according to figures drawn up by the Irish Food Board, a government-funded body responsible for promoting Irish food and drink.

In Britain consumption has recovered from a 40 per cent drop to 15 per cent and in the Netherlands it has bounced

back from 50 per cent to 10 per cent.

EU farm ministers pressed Mr Franz Fischler, commissioner for agriculture, to improve the terms of an Ecu650m (950m) aid package.

Germany, France, Ireland, Portugal and Luxembourg in particular argued for more money. Under the plan farmers who qualify for the special beef premium will receive an additional one-off payment of Ecu2, while those who qualify for the suckler cow premium will receive Ecu25.

Mr Fischler warned that the commission had "no additional resources", pointing out that the commission would have to "pull out all the stops" by buying meat into intervention if further falls in prices were to be avoided.

He said the Commission was paying out Ecu230m for every 100,000 tonnes bought into intervention. So far 115,000 tonnes have been taken off the market and into intervention.

Mr Fischler warned that the commission had "no additional resources", pointing out that the commission would have to "pull out all the stops" by buying meat into intervention if further falls in prices were to be avoided.

Science and not politics to dictate Brussels moves

By Caroline Southey in Luxembourg and Judy Dempsey in Berlin

Decisions about the ban on British beef will have to be dictated by science, not politics, Mr Franz Fischler, European commissioner for agriculture, warned yesterday.

Underlining the prospect of a long haul in the beef negotiations, Mr Fischler said the Commission could not "allow the impression to arise that agreements are political and that scientific evidence is secondary".

Mr Fischler was speaking the day after six farm ministers blocked a decision in the council of ministers to lift the ban on three British by-products and as talks began between Britain, the other member states and the Commission on the terms of a framework for the step-by-step lifting of the ban.

The speed at which the by-products ban, which the Commission could agree to today, would be lifted was "up to Britain," Mr Fischler said, adding that

the association is already planning legal action against the government because exporters have been excluded from the government's compensation package for the meat industry.

Individual exporting companies face demands for repayment of refunds worth between £300,000 and £2m, according to the International Meat Trade Association. Many will find their bank guarantees being called in to cover the costs, jeopardising prospects for future exports.

It depended on how quickly licences were issued for plants producing gelatin and tallow and the information passed to the Commission so that inspection teams could be sent to the UK.

Mr Fischler would not be drawn on what the Commission would do if member states refused to allow British imports of gelatin, tallow and semen, saying he did not want to "express any mistrust. All member states are bound by the terms. Unless there is proof to

the contrary I must assume they will keep faith," he said.

Ministers in Germany indicated yesterday that it would still be difficult to persuade the states, or Länder, to accept any imports of British beef or beef by-products. Given all the scientific reasons, it was neither feasible nor responsible to lift the ban, Mr Horst Seehofer, the German health minister, said.

But Mr Malcolm Rifkind, the British

foreign secretary and Mr Douglas Hogg, the agriculture minister, will today try to persuade their German counterparts that British beef is safe. They will meet Mr Klaus Kinkel, and Mr Jochem Borcher, their German counterparts.

Mr Rifkind yesterday met Mr Helmut Kohl, the German chancellor in Berlin, where both were attending the Nato summit. After the 45-minute meeting with Mr Kohl, Mr Rifkind said there was "increasing readiness to find a solution to the problem".

German officials, however, said their government's position had not changed. The interests of consumers came first, and Britain had to put forward a clear timetable for slaughtering animals and eradicating mad cow disease before even the slightest concession would be considered. There also had to be a consensus in the scientific community.

Germany's health ministry - and the Länder, or states - have consistently opposed any partial lifting of the ban in "the interests of consumers," as Mr Seehofer said yesterday. Next week, he will meet the Länder in Berlin to discuss how they should react to any partial lifting of the ban.

UK NEWS DIGEST

\$150m defence order awarded

Smiths Industries, the aerospace equipment manufacturer, said it had won an order worth up to £100m (\$150m) to install enhanced safety systems on UK military helicopters.

Plans to fit the equipment followed the crash in 1988 of an RAF Chinook in Scotland which killed four crewmen and 25 senior Northern Ireland security experts.

The system works by collating data from 200 sensors around the aircraft, which can be monitored by pilots for signs of stress or fatigue. That information can be used subsequently by maintenance crews for helicopter repair work and enhances the function of "black box" flight recorders in the event of a crash.

Being attractive to the opposite sex is twice as important for men in this age group as it is for women, according to Mintel, the market intelligence group.

Rebel accountants defeated
Rebel members of the Institute of Chartered Accountants in England and Wales failed by a wide margin to persuade its annual meeting to back direct elections for the post of president.

Skill shortages alleged
Skill shortages are holding back expansion in the British engineering industry, said Mr Davey Hall, president of the ASEU engineering trade union.

Government secrecy claimed
Friends of the Earth, the environmental group, yesterday accused the government of using legally "dubious" excuses for withholding environmental data on water companies and other privatised enterprises.

Democracy loses friends
Rising public dissatisfaction with government and the state of democracy is not a uniquely British trait. The trends are similar throughout the developed world, with sharp declines in public confidence across most European Union states over the past five years.

Disatisfaction with democracy
The EU as a whole was at 2.5 or above from 1984 until 1992. The subsequent decline in satisfaction with democracy is less sharp for Britain than for some other EU states - notably Germany, under the impact of unification. Public confidence in democracy has long been lower in France than in Britain.

Telecoms watchdog changes direction
Mr Don Cruickshank, the telecommunications industry watchdog, believes in consultation. The results are apparent in Ofel's final proposals for controlling British Telecommunications' prices and trading behaviour.

Mr Don Cruickshank, the telecommunications industry watchdog, believes in consultation. The results are apparent in Ofel's final proposals for controlling British Telecommunications' prices and trading behaviour.

Mr Cruickshank's exploratory proposals had led BT and the rest of the industry to expect a pricing regime between 1997 and 2001 that would be little different from the existing tough controls - a cap on annual increases in charges on 60 per cent of BT's services equal to the rate of inflation minus 7% percentage points.

Ofel says its proposals will enable it to take a big step away from being a detailed, prescriptive monopoly regulator and towards being a fair trading authority.

Why the sudden change of direction and why did this "narrow basket" option emerge so late in the consultative process? According to Mr Cruickshank the narrow basket was popular with consumer groups, which tended to make their submissions to the consultative process at the last minute. It was also the result of a more detailed analysis of the state of competition in UK telecoms. There will be those who will say that Mr Cruickshank has elected to set BT a comparatively easy pricing target to make it more amenable to accepting his plans to take broader powers to outlaw anti-competitive behaviour among all licensed operators.

Mr Cruickshank has made clear that he sees the new pricing regime and the fair trading condition as indivisible. BT will have so much more freedom to set prices that controls are essential. BT has made clear that it will not accept the condition - with which it agrees - without an appeals procedure. Under the 1984 Telecommunications Act, Mr Cruickshank cannot allow such a procedure.

COMPANY NOTICES

INTERNATIONAL TENDER

ARAB COMPANY FOR LIVESTOCK DEVELOPMENT "ACOLID" INTEND TO ESTABLISH AN INTEGRATED DAIRY PROJECT IN THE KINGDOM OF SAUDI ARABIA

INTERESTED BIDDERS CAN CONTACT AT RYADH 11415 - P.O. BOX 18389 K.S.A. TEL: (01) 4625445 - FAX: (01) 4651497

CLOSING DATE IS 4/9/98 AT 1:30 P.M.

LEGAL NOTICES

NOTICE OF APPOINTMENT OF LIQUIDATOR

Name of company: G W J Holdings Limited

Name of liquidator: Ernst & Young

Address of registered office: 90 Newmarket Road, Cambridge CB5 8EU

Date of appointment: 30 April 1998

NOTICE TO CREDITORS

G W J Holdings Limited

(In liquidation)

The creditors of the above-named company are requested, on or before 23 June 1998, to send their names, addresses and particulars of their claims to the undersigned, the liquidator of the company at Ernst & Young, Company House, 90 Newmarket Road, Cambridge, CB5 8EU.

Date: 30 May 1998

C J Hill

Liquidator

Telecoms watchdog changes direction

By Alan Cane in London

Mr Don Cruickshank, the telecommunications industry watchdog, believes in consultation. The results are apparent in Ofel's final proposals for controlling British Telecommunications' prices and trading behaviour.

Mr Cruickshank's exploratory proposals had led BT and the rest of the industry to expect a pricing regime between 1997 and 2001 that would be little different from the existing tough controls - a cap on annual increases in charges on 60 per cent of BT's services equal to the rate of inflation minus 7% percentage points.

Ofel says its proposals will enable it to take a big step away from being a detailed, prescriptive monopoly regulator and towards being a fair trading authority. "Competition, rather than Ofel, would increasingly become the industry regulator."

Why the sudden change of direction and why did this "narrow basket" option emerge so late in the consultative process? According to Mr Cruickshank the narrow basket was popular with consumer groups, which tended to make their submissions to the consultative process at the last minute. It was also the result of a more detailed analysis of the state of competition in UK telecoms. There will be those who will say that Mr Cruickshank has elected to set BT a comparatively easy pricing target to make it more amenable to accepting his plans to take broader powers to outlaw anti-competitive behaviour among all licensed operators.

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SECURE A FUTURE WITH OPTIONS



Financial markets are becoming increasingly competitive and sophisticated... financial instruments more complex and risks more difficult to manage. In an environment of constant and accelerating change, the challenge facing banks and their employees is to secure a profitable future in a lean and uncertain world.

For the organisation the future now depends on your most valuable asset... your people. As you strive to achieve more and more with fewer and fewer, their motivation, knowledge and skills will be vital. To stay ahead of the competition you must keep your people ahead of the learning curve.

FOR YOUR ORGANISATION

- realise the performance potential of your people
- optimise the use of training budgets and that precious resource, time
- make objective assessments of technical skills

FOR YOU

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BUSINESS AND THE ENVIRONMENT

Angela Bleasdale writes on solar energy's new dawn in the first part of a series on the sector

Here comes the sun

Solar power, for decades regarded as environmentally worthy but uneconomic, is increasingly being seen as a viable energy option with vast commercial potential. In spite of hundreds of millions of dollars of investment during the past 20 years, the world market is still small. Only about 70MW of photovoltaic (PV) cells were produced last year for solar power - enough to power a small city such as Oxford in the UK.

Yet a combination of new technology developments, rising demand in developing countries and measures by western governments to kick-start their own markets is generating a brighter future and a potential multi-billion-pound market.

According to Strategies Unlimited, a California-based consultancy, the industry has the potential to grow to 1,600MW by the year 2010, under certain conditions. The forecast was released last month at a PV convention in Virginia, organised by the US Institute of Electrical and Electronic Engineers.

Growth like that would be a shot in the arm for the PV industry. For several years, world production has shown steady year-on-year growth of about 15 per cent, but manufacturing capacity still exceeds demand. Globally, there is an

estimated annual turnover of just \$450m (\$680m), according to the Energy Technology Support Unit at Harwell in the UK. It is "little more than a cottage industry", says John Harford, manager of strategic planning at BP Solar International, a subsidiary of British Petroleum, the UK-based oil group. PV enables light to be transformed directly into electric power - when light falls on to

Solar panels can be located in the facades or roofs of commercial or domestic buildings

the solar cells' thin film of treated semiconductor material (usually silicon), electrical charges are generated and conducted to an external grid.

Much of today's demand comes from remote communi-

ties not linked to the national grid in industrialised and developing countries.

Philip Bouverat, commercial director at the Intersolar Group, a specialist solar electric company, says the markets in developing countries are large and growing, and there is a great need for low-cost solar devices to bring electrification to rural communities.

In Indonesia alone, an estimated 11m families are without electricity. Depending on the volumes, the cost of some solar devices could be as low as \$3 per watt, says Bouverat. He says that, as volumes increase and the price approaches \$1 per watt, solar will become competitive with conventional energy.

At present, solar energy costs about 50p per unit (kWh) as an installed working system. That compares with approximately 7p per unit for conventional electricity (nuclear and fossil fuel) and

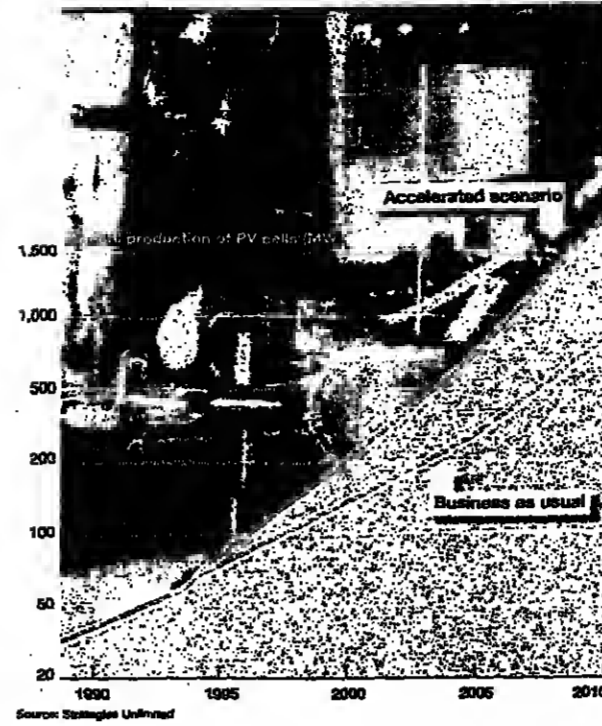
20p per unit for wind-generated power.

In western countries, expansion of the market could lie in grid-connected applications, where PV-generated electricity can be fed back to the national grid. Harford identifies two such applications, the first being centralised PV stations, regarded as "the holy grail" by many in the industry.

But a more likely application in the shorter term would be on PV's main advantages - power generation at point of use, avoiding distribution and transmission costs, and the fact it can be integrated into most urban buildings. It is this area, with its substantial market potential, that has caught the imagination of the European PV industry. Solar panels can be located in the facades or roofs of commercial or domestic buildings to generate a portion of a building's electricity needs.

Richard Page, the UK junior

Two views of the future for the world photovoltaics industry



energy minister, supported this view at a recent PV conference in London. He emphasised the UK's commitment to renewable energy, including solar, which was reflected in such government projects as the Technology Foresight programme and the Department of Trade and Industry's New and Renewable Energy programme.

The DTI helped finance the £1.5m conversion of a building in Newcastle upon Tyne into the UK's first solar-power office block Page said it showed that office buildings "will be able to generate one-third of their electricity needs from PV cladding". But Greenpeace, the environmental lobbying group, says

two-thirds of the UK's present electricity production could be generated by PV if it were deployed wholesale in homes and offices.

Harford says the industry faces a "chicken and egg" problem - PV-generated electricity is still more costly than that from fossil-fuel power stations, but, if manufacturers were guaranteed sustained demand, they would invest in high-volume production, reducing costs dramatically.

The US Department of Energy has established a joint programme with the utilities to create what it sees as a necessary virtuous circle. It intends to double sales for solar products in four years and more than double the number of utilities using PV. It spent about \$88m (£58m) on initiatives in 1995 and its cumulative expenditure is approaching \$880m.

For many years, Japan has promoted PV through its "sunshine" renewable energy programme to reduce the dependence on nuclear energy and on imported oil and gas. By 2000, it aims to stabilise carbon emissions at 1990 levels, a commitment also made by more than 150 developed nations, including the UK. Japan also says new energy sources will account for 2 per cent of its energy requirements by 2000, 3 per cent by 2010.

That compares with the European Commission's "PV in 2010" study which calls for production of electricity from renewables to be trebled. It also concludes that roof and

building-facade grid-connected applications represent the fastest-growing solar market in Europe.

Other market initiatives include rate-based incentives where individuals or businesses invest in PV, recouping their investment over 10 to 20 years via a premium rate for the electricity they feed into the national grid. The schemes are funded by a small surcharge on electricity bills. Harford says such schemes work best in countries with a high degree of local autonomy, such as Germany and Switzerland, where utility companies may be owned by local authorities and are more responsive to consumer preferences. He believes other mechanisms would be more appropriate for the UK.

Philip Wolfe, Intersolar's managing director, says the time is right to include PV in the UK's Non-Fossil Fuel Obligation, which subsidises electricity produced from renewable sources. Inclusion would expand the market, he says. The DTI has so far excluded PV from the NFFO mechanism. "The costs of PV-generated electricity have precluded this," Page says. The position will be reviewed after the next NFFO order, to be made in 1997.

However, John Battle, Labour's energy spokesman, says the party is committed to "prizing open NFFO" and will include PV as part of its green energy policy.

Viewpoint • By Peter Knight

The empty promise

The idea of 'product stewardship' is unlikely ever to work

You have finally painted that cupboard. What do you do with the nearly empty can of brilliant white

gloss? Put it in the bin or drive to the licensed disposal site for hazardous waste where it rightly belongs?

Chuck it in the bin, of course. Welcome to the wacky world of "product stewardship", where manufacturers promise to take full responsibility for their products from start to finish, but fall far short of their goal.

Such stewardship is one of the central pillars of the chemical industry's Responsible Care programme, a voluntary initiative designed to improve the safety and environmental performance of the industry and, of course, its public image.

You will find plenty of promises about product stewardship in corporate policy statements on the company's website. The idea is cropping up in other business areas too, most notably in the timber and paper industries (forest stewardship) and in fisheries (marine stewardship), where companies promise to take better care of that part of the environment that supports their particular business.

Product stewardship is a wonderful idea but it is unlikely ever to work. There are three big problems. First, the word "stewardship" connotes the sort of morality that business hates. Second, the idea only half-works in practice. Third, it is all based on empty promises.

A steward used to be the head slave, the man who looked after his master's

Stewardship is a non-starter without policies that prime the markets

household. He never owned a thing but had to make sure that everything ran smoothly, all accounts balanced and the estate was in tip-top shape to pass on to the heir.

Greens tell us we must be the stewards of the earth and look after it for future generations. This sounds fine coming from a pulpit and it might indeed be the "right thing to do". But, as a business word, "stewardship" stinks. It is dripping with morality, which makes it difficult to sell to managers trying to meet financial and production targets.

Maybe we don't need a new word at all, because product stewardship is all about the well-established idea of after-sales service and adding value. Business has saddled

itself with "stewardship" because it looked so good, so responsible, on the page after Love Canal, Bhopal, Seveso and other chemical disasters in recent decades.

As for the theory and practice of product stewardship, the term implies that the manufacturer will, among other things, ensure that a product can be disposed of without damaging the environment.

Industry points to examples of successful product stewardship high up the supply chain: safer transport of hazardous chemicals; cleaner production methods; safer packaging and so on. But that is the easy part.

The real difficulty lies nearer the end. If companies really practised product stewardship, they would ensure that consumers could easily give back their spent products: the paint tin, the old toaster, the dud computer, the chipped acrylic counter top.

There are, of course, examples of recycling schemes that work - but not many - and their impact is small. That is because it costs too much. You cannot expect the paint maker or the computer manufacturer to offer unilaterally a free collection and disposal service when the market will not bear the cost. Product stewardship is a non-starter without policies that prime the markets to support the practice. When products reflect their full environmental costs - including disposal - the stewardship of those products will be possible.

This is an area where government has to set policy in conjunction with the producers so that everyone is playing by the same rules. Until then, there is no point in business swaggering about making all sorts of promises about cradle-to-grave stewardship when it knows that it will stumble in the cemetery.

The Responsible Care initiative was, in part, a defensive action to save the hazard-prone chemical industry from restrictive legislation. Responsibility, like stewardship, implies self-regulation. The notion stuck because it coincided with the fashion for deregulation, market mechanisms and slim-line government.

Responsible Care has certainly had a beneficial impact on the big chemical companies, improving their performance and their image.

But because Responsible Care is toothless, it encourages free riders - those companies that exploit the higher standards of the others.

If this form of discipline is going to work, the chemical industry - like all industries - will have to develop ways to get rid of the bad stewards.

Companies will never be able to fulfil their stewardship responsibilities when there are no police - whether real people or fully-primed markets that demand accountability. Until then, product stewardship will be about empty promises.

Peter Knight is a specialist writer on business and the environment.

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COMMENT & ANALYSIS



Edward Mortimer

The awkward squad

As the election of Netanyahu shows, electors have a nasty habit of voting for people who upset the international establishment

"The trouble with free elections," according to the late Nikita Khrushchev, "is that you never know who will win."

He was right. Free elections have become more fashionable since his time, and this year electorates show a disturbing tendency not to vote as foreigners think they should.

Since last December Turkey and India have produced hung parliaments with no coherent majority in which the largest party represents a form of religious nationalism regarded as unacceptable by the political establishment at home and abroad.

Albanian voters may have wanted to upset the world by voting against President Sali Berisha, a key figure in western attempts to stabilise the Balkans. We cannot know for sure because Mr Berisha, evidently a believer in the Khrushchev doctrine, took such precautions against their doing so that he himself has become an international embarrassment.

Only the Italians have behaved well, for them. No one expects them to elect a one-party government with an overall majority, but they did for once make a clear choice between two rival coalitions, and in voting for the alliance dominated by the former communists they chose the one that Italy's allies and partners are most comfortable with.

How times have changed! More threesoma was last week's performance by voters in Northern Ireland. Invited to choose delegates for all-party talks on their province's constitutional future, they responded by giving a boost to one party - Sinn Féin - which will almost certainly be disqualified from taking part in the talks by the absence of an IRA ceasefire, and to another - the Democratic Unionist party - which has made clear

it will not talk to Sinn Féin even if there is a ceasefire. While that was going on, Israeli officials were counting and recounting the votes in their country's first direct election of a prime minister. By Friday there was no getting away from it. Mr Benjamin Netanyahu had won.

This is the biggest upset yet. If there is one plea to which the international establishment unanimously subscribes, it is the importance of the Middle East peace process and the indispensable role in that process played by the late Yitzhak Rabin and his successor Mr Shimon Peres.

"Bibi" Netanyahu is verbally committed to respecting the results so far, but he and his party have denounced each stage of the process, and have made it very clear they intend to make no more concessions. They will not contemplate withdrawal from the Golan Heights - which means there is no prospect of peace with Syria, and therefore a virtual certainty of continuing hostilities in Lebanon.

They will resume intensive Jewish settlement in the West Bank. They will not even talk about the future of Jerusalem, or about allowing the present Palestinian Authority to develop into a state. Indeed

Mr Netanyahu will do his best to avoid talking to Mr Yasser Arafat, the PLO leader, at all. He may well refuse even to go ahead with the agreed withdrawal of troops from Hebron next week at the very least if he is likely to be delayed if he has not formed his government by then. All this makes it certain there will be more violence by Palestinians against Israelis - there were already clashes in Hebron on Monday. Mr Netanyahu is pledged to escalate this by sending troops back into the area under Mr Arafat's control if Mr Arafat does not deal with it to his satisfaction.

Mr Netanyahu's victory is a slap in the face for the international establishment, and for the Clinton administration in particular. US officials privately answered criticism of the appalling one-sided US attitude during the recent fighting in Lebanon by saying that their one overriding priority was to help Mr Peres win the election. In other words they staked everything on a horse which turned out to be a loser.

When something like this happens, the establishment swings into damage-limitation mode. People fall over themselves to discover statesman-like qualities in politicians

who yesterday were regarded as beyond the pale. I have not checked, but I feel sure that in January 1988 there were editorials arguing that, confronted with the realities and responsibilities of power, Herr Hitler would have to distance himself from his more intransigent supporters and more irresponsible campaign rhetoric; that he was bound to take account of the realities of Germany's international situation; that the Brüning government had been far from ideal, and Germany would benefit from a new generation and a new style of government; and, when all else failed, that "at least with these people we know where we stand".

A grotesque analogy, of course. Mr Netanyahu is not Hitler, but the elected leader of the survivors of Hitler's victims. There is no reason to think he will embark on the mass extermination of Arabs or Palestinians, or even on a programme of deliberate territorial expansion. But his concept of Israeli security will require him to hold on to the Palestinian, Syrian and Lebanese territory Israel already occupies. It could lead him to undertake a new ground offensive in Lebanon, possibly leading to a direct clash with Syria. Many Arabs, and probably not a few Israelis, will meet their deaths as a result.

His election has already been welcomed by Mr Newt Gingrich, speaker of the Republican-controlled US congress; and a Democratic president seeking re-election is most unlikely to risk a serious confrontation with Israel. Until November, at least, and probably beyond, Bibi and his colleagues will have a free hand. It would be surprising indeed if there are no Arab provocations for them to respond to.

Meanwhile, we can all get into practice at looking on the bright side. We shall need that, if the fashion for upsetting the international establishment is followed by Russian voters next Sunday week.



Yeltsin (left) and Berisha cast their votes

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Software skills can match chip development

From Mr Marijn Thomas

Sir, Your leader, "Chips galore" (May 28) correctly forecasts that computer processors will continue to double in power and halve in price every two years for the foreseeable future (Moore's Law). You are on less firm ground with your comments on software.

A microprocessor with more than 100m computing elements will be a great challenge to design correctly, but it should be little or no harder to program. Most software is written in high-level languages, using a special program (known as a compiler) to generate the machine code for such processor chips. Compiler technology has been

well understood for two decades.

You say that progress in software is slow and shows little signs of accelerating, but this is not my experience of the past 20 years.

The UK software industry can now offer software more cheaply and more quickly than ever before, and provides solutions to business problems that would have been impossible large or complex in previous decades. We can develop systems that are highly reliable, and which provide a continuous, secure service. Where the application demands the highest assurance we can prove that the software meets its specifications, using

mathematical techniques and special software tools.

Unfortunately, too many software projects still fail. Often, this happens because software development is seen as a low-skill craft, rather than one of the hardest (because most abstract) engineering disciplines. While companies continue to hire contract programmers to develop their systems, instead of calling in consultant engineers to manage the whole project, these expensive failures will continue.

Companies have long recognised the important role of architects and consultant engineers in construction projects. With computer systems destined to become

even more pervasive and fundamental to society, it is time that software development and systems integration became recognised as an engineering profession, and that purchasers started questioning the qualifications and engineering credentials of their suppliers.

Then we shall be able to realise the benefits of Texas Instruments' breakthrough for world creation and improved quality of life.

Martyn Thomas, managing director, Praxis, Deloitte and Touche Consulting Group, 20 Manserv Street, Bath BA1 1PX, UK

The politics of welfare 'benefit'

From Mr Eugene Hammons

Sir, When will Patti Waldmeir and her like realise their mistake when assuming the welfare system in the US "benefits" anyone, especially blacks and Hispanics? (A handbook on the subject of "presidency", June 12). Crime, domestic violence, illegitimacy and hopelessness have all grown disproportionately to the growth of the general population as more and more federally sponsored welfare spending has stimulated their very existence.

Bob Dole understands this, and he apparently had something to say about the causes and remedies of domestic violence. And where else should he deliver such a message but where the problem exists? It would be considered less than courageous for him to have addressed the subject of domestic violence in the elite Chicago Club than where the violence actually takes place. Unfortunately, we will never have the privilege of knowing the content of his speech because Waldmeir and others who report on such happenings are more bent on talking about his seeming lack of "feeling the neighbourhood's pain" than the substance of his ideas.

The truth is Bob Dole knows pain in a way that President Bill Clinton cannot even begin to imagine. No, Mr Dole cannot produce tears on demand as can Clinton. In a way that fairly defines the campaign, substance versus falseness and guile.

Eugene Hammons, 11599 Palestine Road, Brawley, Texas 77833, US

Mandatory sentencing is correct response to crime

From Mr P.J.R. Preston

"The rights and wrongs of locking up more criminals" (June 1) is extremely biased towards the establishment viewpoint. For the most part, their views have been moulded by an upbringing in a different, more affluent, milieu, resulting in their very limited appreciation of the reasoning of the majority of people.

It is the duty of parliament to enforce the majority will and if it is what Michael Howard, the home secretary, is doing then, no matter what his ulterior motives, he is undoubtedly doing the right thing.

The cost of crime detection, prosecution and punishment bears hardest on the ordinary worker, who can least afford to install protective devices and have adequate insurance cover. Their actual standard of living is affected by crime, more so than that of the

establishment, Church, prison reformers and other so-called do-gooders.

Most criminals come from the working class. Their peers know that, with very few exceptions, it is their own choice to commit criminal acts. Subconsciously or otherwise, the weight up the risk of being caught, against probable gain, and act accordingly.

At the apparent whim of the judge, the criminal may receive a totally inadequate sentence. Of course the ordinary person is incensed with the inability of those responsible adequately to punish the crime. It is stated, the certainty of punishment is a strong deterrent, then - since crime is the free choice of the criminal - let us have mandatory sentencing of a strongly deterrent nature.

P.J.R. Preston, 804-5170 Gladwin Road, Abbotsford, BC, Canada

Land is ours

From Ms Elizabeth Herzog

Sir, I am somewhat confused by the FT's repeated use of the adjective "Arab" every time it employs the word "land(s)" when describing territory lived in by Jews in Israel.

When writers refer to California, do they call it Mexican land, or, for that matter, is America ever referred to as Indian land? How about the Falkland Islands being called Argentine land, not to mention the Irish land of Northern Ireland?

Jews in Jerusalem are celebrating 3,000 years of Jewish presence in this land. After repeated invasions by Persians, Greeks, Romans, Arabs, Turks and British, the majority of us have returned to reclaim that which was ours under the Davidic dynasty. The Arab occupation of our land was just another blip in history.

Elizabeth Herzog, 7 Diskin, Jerusalem 96440, Israel

Fortunes made by Russia's former communists

From Mr R.R. Tidmarsh

Sir, Anders Aslund (Europa column, May 31) has quite correctly outlined the principal methods by which some Russians have made fortunes, since the break-up of the Soviet Union.

But when he refers to the frequent attribution of blame to "reformers" for the resulting social inequalities he fails to point up a factor which is often missed in the west. This is that it is not a question of which techniques were used for such enrichment or who were the particular reforming politicians responsible for the massive creaming-off of Soviet wealth.

The point surely is that the

entire process was devised and operated by the former communist party intelligentsia. It is now largely the same communist apparatus which have simply changed their caps to become the new capitalists. Those who used to be powerful by virtue of their influence in the party have now acquired even greater power - and certainly security - through their new-found financial clout.

According to a recent study by the Institute of Sociology of the Russian Academy of Sciences, the overwhelming majority of the new Russian elite are former members of the communist party.

"nomenklatura". Right across

Russian society the bulk of the financial and political elite are former apparatchiks - 75 per cent of the presidential entourage, 74.3 per cent of top civil servants and 61 per cent of the leading business people. The newspaper "Izvestia" has just published a revealing report on the city of Briansk where all the commanding heights of local industry were taken into their own hands by local communist party officials - through a systematic "privatisation" operated by the regional governor, himself communist.

R.R. Tidmarsh, Villa Malore Tour, 1286 Miles, Switzerland

Personal View · Niall FitzGerald

A European nightmare

Since membership of the EU is vital for UK business, withdrawal is not a serious option

Nothing keeps me awake at night. And only rarely do I have nightmares. But I dreamt the other night that there was serious talk in this country about the UK leaving the European Union, that seemingly sensible people were actually claiming the UK would be better off outside, and that the British government had announced a policy of non-co-operation on single market legislation.

The real nightmare started when I woke up, and found it was true. As a businessman I cannot believe that people are actually thinking the unthinkable. It is fundamental to the economic success of the UK that it remains not just part of, but at the heart of, Europe.

That is why present government policy over the ban on British beef concerns me. I am not, of course, privy to the details of the precise negotiating dynamics, and therefore cannot give an informed opinion on the likely effectiveness of their approach.

But judged from outside, this policy is not helpful to British business interests in Europe, and - if sustained - will be harmful. I can, therefore, only hope that the policy of non-co-operation will be brought to a halt, especially now that the ban on UK exports of beef derivatives seems about to be lifted.

Such an approach also gives succour to those siren voices

who wish to lure the British on to the rocks of withdrawal. It angers me when politicians in particular indulge themselves in such talk without taking any responsibility for the horrific economic consequences of such a step. They do not know what they are talking about.

Much of Britain's prosperity derives from its industry and business being in the heart of Europe. The UK is part of one of the world's three great trading blocs, a single market of 370m consumers responsible for 40 per cent of world trade. To think it could prosper outside the EU is to ignore the facts.

It is, for example, naive to claim that Brussels would be unable to impose tariffs on goods and services imported from a newly-departed Britain because of the World Trade Organisation. It is not just about tariffs. The EU would naturally draw up rules of trade to suit its needs - not those of outsiders.

And it is nonsense to suggest that multinationals have been investing in the UK simply because of language and improved labour relations. The truth is they have been coming to Britain because it is a competitive entry point for Europe. It was crucial for them to invest and Britain was simply the best place to be for access to the EU.

At the heart of all of this is the single market. It is true that it is by no means perfect or complete. There is a need to improve the implementation and enforcement of legislation evenly across Europe. There is much to be done in removing state aids and liberalising markets still not open to free competition, such as telecommunications, energy and transport.

But the single market has probably been the most important boost to European competitiveness over the past 10 years. It has given companies the ability to operate on equal terms in an open business environment, and to pass on that benefit to the consumer.

Take my own company, Unilever. About half our annual turnover of £2bn (\$2bn) is in Europe. Over the past five years, the prices of many of our products have actually fallen because of the cost reduction coming from the more effective and harmonised organisation of our operations across the EU. Europe also gives us the solid base we need from which to trade globally, producing resources for us to invest elsewhere in the world.

The single market is a great stimulus to productivity and the UK throws it away at its peril. That really is the heart of the argument. The British must not allow it to be deflected by wrangling over issues like Spain and a single currency. The completion of the single market does not depend on a single currency.

It is irresponsible to claim there is a serious case for UK withdrawal from the EU and then choose to ignore the reality of the economic consequences

and that debate should be kept separate.

But then the quality of the debate itself leaves me close to despair. It is irresponsible and self-indulgent to claim there is a serious case for withdrawal and then to choose to ignore the economic consequences. The violent and irrational way in which this view is expressed is causing the UK's prosperity and its position in Europe. Some politicians and media commentators seem to show little respect for the common sense or the well-being of their fellow citizens.

It is, therefore, time for the business community to stand up and be counted. The Confederation of British Industry is leading the way, with a concerted business in Europe campaign designed to put business priorities at the top of the European agenda and promote a sensible, rational debate on the vital issues.

The campaign comes to a head today in London at the start of a week of events across the country which will give the business voice on Europe the platform it deserves.

The 1975 Euro-referendum only really started to swing towards entry when business engaged in the debate. Our arguments had more substance than those of the politicians. It is again necessary for us to spell out the harsh realities of life and forgo misty-eyed romanticism.

Withdrawal from the EU is not an option. That message must be shouted from the rooftops. The pragmatic voice of business must be heard.

The author is the chairman-designate of Unilever and chairman of the Confederation of British Industry's Europe Committee.

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COMMENT & ANALYSIS

FINANCIAL TIMES

Number One Southwark Bridge, London SE1 9HL. Tel: +44 171-873 3000 Telex: 922186 Fax: +44 171-407 5700 Wednesday June 5 1996

Blessed are the weak

Every dog has his day - and so, it appears, does every currency. For some time now, the currencies that have been having their day are indeed the dogs - the US dollar, the Italian lira, the pound sterling, the Spanish peseta, and all the weaker European currencies. Meanwhile, pedigreed canines, such as the Japanese yen and the German D-Mark, have been rather feeble. Why has this happened? Can it last? And should the owners be pleased?

Back in April 1995, finance ministers and central bank governors of the Group of Seven leading industrial countries decided the dollar had become too weak. Whether by luck or judgment, their wishes were the markets' command. By yesterday, the dollar had risen to Y109 and DM1.53, revaluations from its trough of 95 and 13 per cent, respectively.

Political judgment

Within Europe, there is another force at work - the credibility of economic and monetary union. This is a political judgment by the markets, not an economic one, since so far only Luxembourg, Ireland and Denmark qualify - none central players and the latter two only by finessing the public debt criteria. Yet that political judgment may well be correct.

Collapsed differential

The revaluation of weak currencies has been quite general. Every ERM member currency is within its old narrow band against the D-Mark. The French yield differential vis à vis German 10-year bonds has disappeared. The Italian differential has collapsed from a peak of 6 1/2 percentage points last year to only a little over 3 percentage points. The differential on British gilts is an exception to this general trend, however. It has tended to rise and is now 1 1/2 percentage points.

Airport profits fly too high

BAA, the UK airports operator, has a high international reputation and invests heavily on improvements, but the public pays a price. Because of the peculiar way in which it is regulated, the company makes more money than a monopoly ought to make. And it is hard to determine how far profit is driven down without curbing its desire to invest.

On balance, people should be moderately pleased by what has happened, since the present concatenation of interest rates and exchange rates should lead to more balanced growth within both the world and European economies. The French and Germans should also realise that their phobia about the perpetual currency weakness of the likely Euro outsiders has been greatly exaggerated.

Competitive tenders

An alternative would be to beef up competition within an airport. BAA already holds competitive tenders for many services such as airport shops, but it keeps the monopoly rents. This is not a very satisfactory system, since these profits are only regulated indirectly. When the price cap for retail charges is fixed, all other expected revenues are taken into consideration. Under this "single till" system, revenues from duty free shops effectively subsidise landing charges. Since this is the system adopted by other international airports, it might be difficult to unscramble. Nevertheless, it should be looked at.

Licensed monopolies

Regulation can continue to tighten the caps on traffic charges. However this revenue now represents only about a third of BAA's total turnover. The best way to improve incentives for efficient investment would be to increase competition.

A more hopeful possibility would be to hold a competitive tender for the building of the projected Terminal 5 at Heathrow, assuming planning permission can be obtained. The successful bidder would become an independent operating company within the airport. It would need some protection from the regulator, for example, to ensure that runway charges were not stacked against it. Such regulatory problems can be solved, as has been shown in other industries, notably gas and telecommunications.

A hidden hand of corruption

Peter Norman on Germany's plans to raise the penalties for corrupt business practices, one of the country's few fast-growing activities

A glowing future seemed assured for Mr Hans Jakob Zimmermann, a leading executive with Thyssen, the German steel and engineering conglomerate. But late last year he was forced to resign for using his company's services and those of a leading supplier, Hochtief, to rebuild his Essen home at bargain basement prices.



Several hundred kilometres to the south in the state of Baden-Württemberg, the rector of Offenburg technical university has been suspended from office and is appealing against being found guilty of awarding a degree to a student in return for his restoring the professor's classic car.

der corruption in much of the country. The former communist east Germany has proved to be a particularly fertile field for corrupt activities, according to Mr Werner Rügemer, the author of a forthcoming book on corruption in Germany and abroad. He says there were numerous indications of "on average, a high level of criminal energy" among some of those who worked for the government in privatising the eastern economy.

As in most societies, there has always been some corruption in Germany. "People having their house built by their employees, that is business as usual," says Mr Dieter Lohse, the head of KPMG's international forensic accounting network for Germany in Berlin. But Mr Lohse senses a qualitative change because of the growing number of forgeries of documents and invoices and balance sheets.

Mr Scholze also detects a new quality in German corruption, which he links to the Europe-wide problem of organised crime. "We have found that Mafia-like organisations are targeting public bureaucracies with the aim of exercising corrupt influence - and we must put a stop to that quickly," he says.

against unfair competition will be upgraded to criminal offences - including price-fixing by companies competing for public contracts. The maximum jail sentence in cases of corruption between companies is to be raised from one to three years - with the possibility of five years in extreme cases. Judges guilty of serious bribery offences could face up to 10 years in jail.

OBSERVER

Cap'n Crunch man

A happy newsroom is an oxymoron, as Mark Wiles has discovered in the year since he took charge of Times Mirror, a wire-worn publisher of the Los Angeles Times.

Raisa, at least. As the Russian presidential election gets closer - and Gorbachev's chances of winning recede - his wife Raisa has apparently told a Russian newspaper that she is selling her evening dresses to Moscow second-hand shops. The reason? She thinks she no longer needs them.

Champions lose

First we had Ian Lang the Trustbuster, enemy of the world-be giant of the electricity industry. Now we have Lang the scourge of national champions. To ram home how far opposed he is to the doctrine preached by his predecessor Michael Heseltine, the UK industry secretary will today abolish the National Enterprise Board.

Raisa's rag trade

Looks as though Mikhail Gorbachev has thrown in the towel, after all, Well,

bravely picked as winners, the board has never suffered from a surfeit of profits, or fans. "Tory radical John Redwood, always blunt in attack, at least, penned the National Enterprise Board, the Case for Euthanasia" just a year after the board's creation.

Khaki-chip stock

You cannot fault Yassir Arafat on optimism. His officials may have spent the past week warning that peace is doomed if the new Israeli government sticks to its election slogans.

economic figures on the region as "unfortunately, the Israeli authorities have never published separate statistics". And its guide to "Doing business in the West Bank and Gaza" cautions that "most British firms enjoy a good reputation but regular visits are essential", and that "price rather than quality is a deciding factor when obtaining contracts".

Hunger strike

Bouygues, the French construction giant, certainly knows how to make its press conferences more palatable. Hacks invited yesterday to the grand headquarters outside Paris - to chew over the (already announced) 1995 results and to savour the prospects for coming months - were piled with file d'agneau au croissant aux herbes, preceded by a salade de confit de canard à l'ouf poché.

Financial Times

100 years ago

The Argentine Republic From the Speech of President Urburu at the opening of the Argentine Congress: "The Republic enjoys peace, both at home and abroad. Our relations with Foreign Powers are on a footing of frank cordiality. We have no diplomatic reclamations to deal with; those we had have been satisfactorily solved. Amongst international questions the most significant has been that of our demarcation of the frontier-line with Chile, and the arrangements arrived at prepare practical solutions for any difficulties that may arise. Any differences concerning the location of boundary land marks in the Cordillera, which may not be solved in a friendly way, are to be submitted to the arbitration of Her Britannic Majesty."

50 years ago

Many Copper Plants Closed The supply of copper in the United States is becoming critical, and many manufacturers' plants are being forced to shut down for lack of copper. The new ceiling price has confused copper producers owing to the fact that the increase is allowed only to those producers who have reached new wage agreements with workers, and have had the agreements ratified by the proper Government authorities.

Words, Words, Words... We should be called Radisson JAWARDIAN

FINANCIAL TIMES

Wednesday June 5 1996

FRUEHAUF
TRAILERS
Carrying the nation's goods

Move marks vote of confidence in long-term future

Tokyo backs \$300m loan for power plant in China

By William Dawkins in Tokyo

The Japanese government has granted a \$300m official loan guarantee to Japanese contractors working on a 20-year power station project in southern China - the first time it has backed a scheme of this kind.

The deal, approved by Mr Shunpei Tsukahara, Japan's minister for international trade and industry, marks a vote of confidence in China's long-term economic and political future.

Previously, long-term private sector contracts in China were deemed too risky to merit Japanese government backing, according to an official at the international trade and industry ministry.

The lead contractor for the \$1.2bn coal-fired power station is Mitsubishi Heavy Industries, backed by Mitsubishi Corporation, the trading company at the centre of its keiretsu, or corporate family. They account for \$80m of

the work, and the finance is provided by the Keiretsu bank, Bank of Tokyo-Mitsubishi.

A ministry official said final details had yet to be agreed, but the premium for the loan guarantee would be about \$10m. Joint venture partners would be two Hong Kong investors and two Chinese power companies, he said.

The plant, at Zhuhai in the southern province of Guangdong, is due for completion in 1999 and will be operated by the Japanese consortium for 20 years before being handed over to the provincial government.

This kind of contract - a build, operate and transfer (BOT) arrangement - is popular in countries whose governments lack the cash to make full payment on completion of large projects such as power plants.

A growing number of Japanese trading companies have undertaken BOT power plants in east Asia, part of an attempt to diversify

away from low margin export-import businesses.

Marubeni was the first, with a power station in the Philippines five years ago, followed by Nishio Iwai and Itochu elsewhere in Asia.

For all their attractions, BOT contracts entail a political risk, because they assume that the government in power at the end of the contract will adhere to the conditions agreed by a distant predecessor.

Mr Takeshi Miki, the Japanese ministry's deputy director of long-term trade insurance, said the ministry was prepared to assume \$300m of risk in Mitsubishi's Chinese venture after receiving letters from both the provincial government and the central authorities in Beijing promising to support the project.

Another Japanese trading company was bidding for a similar Chinese power project with a possible loan guarantee from the ministry, he said.

IRA rules out fresh ceasefire before talks start

By John Kampfer in London

The IRA yesterday ruled out any prospect of restoring its ceasefire from terrorist activities before the start of next week's all-party talks on the future of Northern Ireland.

In London, ministers are assuming that the statement was not simply issued as a bargaining chip. Recent weeks have not seen the impetus towards a cessation of hostilities that was evident in the run-up to the original ceasefire of August 1994.

The UK and Irish governments were last night on the point of agreeing an agenda for the talks, with London appearing to drop its resistance to a powerful role for former US senator George Mitchell.

Sir Patrick Mayhew, the UK Northern Ireland secretary, was hosting his second meeting of the day with Mr Dick Spring, Ireland's deputy prime minister, to resolve outstanding differences.

Both governments have made clear that Sinn Féin will not be allowed to attend the talks unless the IRA, its military wing, restores the ceasefire it broke in February.

Sir Patrick yesterday formally invited nine of the 10 parties who qualified during last Thursday's Ulster elections for places in the Northern Ireland forum.

Sinn Féin was not on the list, in spite of coming fourth with an increased share of the vote.

Mr John Bruton, the Irish prime minister, said he was confident the outstanding differences over the agenda would be resolved within 24 hours.

Mr Bruton is expected to discuss the Northern Ireland process in a telephone call today with his UK counterpart, Mr John Major.

The Rev Ian Paisley, leader of the hardline Democratic Unionists, said after meeting Mr Major that the British had bowed to pressure from Dublin and agreed to the appointment of a "supremo chairman" to sit as a "sort of Pope".

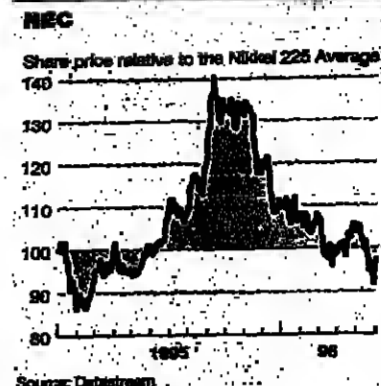
This was denied by British officials, who acknowledge that a prominent, but not overarching role must be given to Mr Mitchell. Mr David Trimble, head of the Ulster Unionists, was understood to have been given a similar message by Mr Major during their talks on Monday.

Even as chairman, Mr Mitchell would be asked to concentrate mainly on the issue of decommissioning paramilitary weapons, which will be discussed in a sub-committee of the main talks.

A close aide of US president Bill Clinton, Mr Mitchell was asked to head a three-man international commission to find a way round the impasse over arms. His report recommended that all sides commit themselves to six principles of non-violence.

THE LEX COLUMN PC union

FT-SE Eurotrack 200: 1729.8 (-3.3)



Source: Datastream

The proposed merger of Packard Bell Electronics with NEC's personal computer operations outside Japan ties up some loose ends, but - whatever the claims - the result will be something short of a global PC business. NEC's Japanese PC operation, left outside the scope of the merger, represents the bulk of its business, while Packard Bell is still mainly a US operation.

Furthermore, the deal will bring in no new money, in the wake of a \$283m cash injection by NEC in February. That three-way transaction also involved the acquisition by Packard Bell of the assets of Zenith Data Systems, the struggling PC subsidiary of Groupe Bull. Still, the latest move will increase NEC's stake in the company to 40 per cent - leaving the distinct impression that NEC is now in the driving seat.

Still, the deal solves problems for both parties. Packard Bell, despite its success in the US retail market, has struggled financially, but will now presumably have access to deeper pockets. NEC, on the other hand, has seen its dominant position in Japan challenged due to its reliance on its own proprietary technology. So there is clearly an attraction to reducing dependency on that market.

These problems are symptomatic of the industry. In an increasingly competitive, low-margin business, strength in a domestic market - even one as large as the US - is no longer enough. Unless they can find buyers or new partners, companies like Olivetti, present only in a few small markets, are likely to wither on the vine.

expected to wipe 10 per cent off revenues this year. Telekom will also have to start paying corporation tax and dividends in the near future, which further limits the scope for cutting borrowings.

Moreover, the group will want to channel some of its scarce cash into building up an international business as its domestic empire becomes exposed to competition. Already it has taken stakes in an array of Asian and eastern European telecoms companies, with little apparent logic to unite them, though its Global One alliance with Sprint and France Telecom looks sensible. With all these uncertainties to be resolved before flotation, Deutsche Telekom has its work cut out in the next five months.

Deutsche Telekom

Yesterday's results from Deutsche Telekom shed little light on the two issues crucial to the group's planned flotation in November. The first is the shape of the regulatory playing field. The German authorities are not even expected to pass the required laws until August and the only certainty is that Telekom will lose either way; a harsh regime might cut its revenues as rapidly as it is cutting costs, while lax regulation would encourage deep-pocketed competitors such as Veba and British Telecom.

The second concern is Telekom's financial position. Net debt stands at a staggering DM100bn (\$65.5bn) and until 1997 much of the group's operating cash flow - DM2.6bn last year - will be gobbled up by capital investment, principally to modernise its local networks. At the same time, the imposition of value-added tax, which the company will have to absorb, is

Cadbury/Coca-Cola

It might seem bizarre for Cadbury Schweppes to sell a bottling business that dominates the UK soft drinks market, but the drinks to confectionery group has got a sweet deal. Coca-Cola & Schweppes Beverages (CCSB) is halfway through a 20-year franchise, the value of Cadbury's 51 per cent holding in which was set to shrink dramatically as it got closer to the end of its life. And there was only one potential buyer. So Cadbury has done well to achieve an earnings enhancing deal. Moreover, the disposal means Cadbury no longer has to proceed with an earnings diluting share placement. Interest cover should hit an exceedingly comfortable 10 times in 1997, leaving the group well placed to fund the expansion of its confectionery business in emerging markets. And this should feed through to its shares.

But while the CCSB disposal leaves Cadbury's balance sheet looking robust, it does raise concerns over the

longer-term future of its drinks business. The stake has been acquired by Coca-Cola's bottling arm, Coca-Cola Enterprises (CCE), which has been busy acquiring bottling plants throughout Europe. Coca-Cola and PepsiCo are becoming increasingly dominant in bottling worldwide. Cadbury argues that it wants to concentrate on building its drink brands, while leaving the production and distribution to someone else. And its sale of CCSB has numerous safety clauses; there is a 15-year licensing agreement for CCSB to continue producing Cadbury's drinks. However, CCE recently stopped producing A&W root beer for Cadbury. The cola giants could eventually put the squeeze on other Cadbury brands.

Vodafone

To say Vodafone's results were above expectations is a rather back-handed compliment when expectations had fallen as they have. And although a 30 per cent increase in earnings is respectable, a big chunk of this comes from an exceptionally sharp reduction in bad debts, sales in the UK are growing at a less dramatic 15 per cent a year. True, there are signs that Vodafone is coping robustly with the ravages of competition - it is, for instance, losing fewer customers; underlying "churn rates" are down to about 20 per cent. And the market is still growing at a formidable rate. The snag is that most new users tend to be low-usage domestic customers, not talkative business. So as revenues per subscriber fall, market growth alone is unlikely to be enough to stop the operators denting each other's margins.

If this were the whole picture, the shares' lofty multiple - 25 times last year's earnings - would be impossible to justify. The question is whether the undoubted prospects of Vodafone's international portfolio are enough to make up the gap. Although sharp international subscriber growth was one of the best features of yesterday's results, these businesses are still loss-making as a group - and as a result, extremely difficult to value. But take a plausible stab - an enterprise value of £2.5bn - and the UK side is being implicitly valued at around 17 times last year's earnings, which is still aggressive. Take into account the huge range of uncertainties in gauging the long-term potential of the international businesses, and the current share price looks no bargain.

Additional Lex comment on Camelot, Page 22

Pan-European media alliance seems close to falling apart

By Raymond Snoddy

One of Europe's most ambitious media alliances, bringing together Bertelsmann of Germany, British Sky Broadcasting and Canal Plus of France, is in danger of falling apart before it has properly got under way.

The heavyweight grouping was planning to launch as many as 100 channels of digital satellite television in Germany by this autumn in competition with the Kirch organisation, but little progress has been made so far.

Mr Rupert Murdoch's News Corporation, the main shareholder in BSkyB, and Canal Plus, the leading French pay television company, are so worried that they have written to Bertelsmann expressing their concern.

If Bertelsmann does not respond, the alliance, which planned an initial investment of

€300m (\$456m), could fall apart in its present form. One of those involved last night described the situation as "serious".

The March announcement of the alliance sent shudders through other media groups in Europe, which feared they were being upstaged.

There has been concern all over Europe at the carving out of alliances to launch digital television, which has the potential to offer as many as 500 channels to European viewers. Europe is on the brink of the digital television revolution with both Canal Plus in France and Telepiu in Italy already launching digital services. Both groups plan to offer next season's French and Italian first division football live on a pay-per-view basis.

The Bertelsmann-BSkyB-Canal Plus group aimed to move on jointly from Germany to launch

digital television in other European countries, such as Italy.

Attempts to create transnational groupings in the media have proved unstable in the past. A previous co-operation agreement between BSkyB and Canal Plus came to nothing.

In Bertelsmann's case, relationships became even more complicated in April when it was announced that after just two days of talks, the television interests of Compagnie Luxembourgeoise de Télédiffusion (CLT) was being merged with Ufa, Bertelsmann's television division.

Earlier, News Corporation had been negotiating with CLT about the possibility of taking a stake but the talks broke down. CLT then appeared to be excluded from the Canal Plus, BSkyB, Bertelsmann alliance only to become a potential partner again through the Bertelsmann merger.

Personal computer makers in merger deal

Continued from Page 1

subsidiary. The portions of NEC's PC business to be merged with Packard Bell are relatively small and comprise primarily the company's US laptop computer business.

In Europe, the merged company will include manufacturing operations in France that were acquired by Packard Bell as part of the deal with Bull.

The merger agreement was valued at about \$300m in NEC assets and goodwill that will be transferred to the combined company.

The transaction does not

change the current shareholding structure, with the founders of Packard Bell, NEC and Bull retaining their current equity positions. NEC and Packard Bell said the newly merged company would go public in about two years.

Packard Bell had PC revenues of about \$4.5bn last year, the company said, and is anticipating strong growth this year, particularly in Europe.

According to Dataquest figures, the combined Packard Bell and NEC operations would have had a US market share of 16.1 per cent in 1995 in terms of unit shipments, making it the US

market leader. Packard Bell, which has been struggling to make a profit, described the merger as the "next logical step" following NEC's earlier investments. Industry analysts suggested, however, that the move is a signal that the struggling group may soon lose its independence.

Mr Tadashi Kaneko, NEC president, said his company had no plans to make additional investments in Packard Bell.

For NEC, the merger offers an opportunity to expand quickly its presence in the US and European PC markets, where it has had limited success to date.

FT WEATHER GUIDE

Europe today
Southern Scandinavia and the UK will become warmer. Norway, Scotland and Ireland will remain unsettled with cloud and rain. Western parts of the continent will be sunny and dry. Readings of 25C will be common in the Benelux and northern France. There will be thunder showers in Italy and the Balkan states. Elsewhere in south-eastern Europe it will continue to be warm and sunny. Russia, however, will see more cloud with scattered showers.

Five-day forecast
High pressure will promote sunshine over most of the continent. Thunder showers will develop in Italy during the next few days. The UK and Scandinavia will remain unsettled with cloud and sunny periods interspersed with rain. Russia will be dry and sunny.

TODAY'S TEMPERATURES

Abu Dhabi	sun	31	Madrid	sun	28	Paris	sun	24	London	sun	20	Edinburgh	sun	18			
Algiers	sun	28	Barcelona	sun	25	Berlin	sun	22	Brussels	sun	20	Geneva	sun	18	Stockholm	sun	15
Amsterdam	sun	25	Bombay	sun	32	Calcutta	sun	30	Delhi	sun	35	Dubai	sun	38	Hong Kong	sun	30
Athens	sun	28	Bangkok	sun	30	Beijing	sun	28	Bombay	sun	32	Brussels	sun	20	Calcutta	sun	30
Bangkok	sun	30	Bombay	sun	32	Brussels	sun	20	Calcutta	sun	30	Card	sun	25	Chennai	sun	30
Bombay	sun	32	Brussels	sun	20	Calcutta	sun	30	Card	sun	25	Chennai	sun	30	Colombo	sun	28
Brussels	sun	20	Calcutta	sun	30	Card	sun	25	Chennai	sun	30	Colombo	sun	28	Dubai	sun	38
Card	sun	25	Chennai	sun	30	Colombo	sun	28	Dubai	sun	38	Delhi	sun	35	Dubrovnik	sun	25
Chennai	sun	30	Colombo	sun	28	Dubai	sun	38	Delhi	sun	35	Dubrovnik	sun	25	Edinburgh	sun	18
Colombo	sun	28	Dubai	sun	38	Delhi	sun	35	Dubrovnik	sun	25	Edinburgh	sun	18	Fero	sun	22
Dubai	sun	38	Delhi	sun	35	Dubrovnik	sun	25	Edinburgh	sun	18	Fero	sun	22	Frankfurt	sun	22
Delhi	sun	35	Dubrovnik	sun	25	Edinburgh	sun	18	Fero	sun	22	Frankfurt	sun	22	Geneva	sun	18
Dubrovnik	sun	25	Edinburgh	sun	18	Fero	sun	22	Frankfurt	sun	22	Geneva	sun	18	Manchester	sun	20
Edinburgh	sun	18	Fero	sun	22	Frankfurt	sun	22	Geneva	sun	18	Manchester	sun	20	Madrid	sun	28
Fero	sun	22	Frankfurt	sun	22	Geneva	sun	18	Manchester	sun	20	Madrid	sun	28	Moscow	sun	20
Frankfurt	sun	22	Geneva	sun	18	Manchester	sun	20	Madrid	sun	28	Moscow	sun	20	Nairobi	sun	25
Geneva	sun	18	Manchester	sun	20	Madrid	sun	28	Moscow	sun	20	Nairobi	sun	25	Rangoon	cloudy	30
Manchester	sun	20	Madrid	sun	28	Moscow	sun	20	Nairobi	sun	25	Rangoon	cloudy	30	Reykjavik	sun	20
Madrid	sun	28	Moscow	sun	20	Nairobi	sun	25	Rangoon	cloudy	30	Reykjavik	sun	20	Rome	sun	28
Moscow	sun	20	Nairobi	sun	25	Rangoon	cloudy	30	Reykjavik	sun	20	Rome	sun	28	S. Frisco	sun	25
Nairobi	sun	25	Rangoon	cloudy	30	Reykjavik	sun	20	Rome	sun	28	S. Frisco	sun	25	Singapore	sun	28
Rangoon	cloudy	30	Reykjavik	sun	20	Rome	sun	28	S. Frisco	sun	25	Singapore	sun	28	Stockholm	sun	15
Reykjavik	sun	20	Rome	sun	28	S. Frisco	sun	25	Singapore	sun	28	Stockholm	sun	15	Sydney	sun	20
Rome	sun	28	S. Frisco	sun	25	Singapore	sun	28	Stockholm	sun	15	Sydney	sun	20	Taipei	sun	28
S. Frisco	sun	25	Singapore	sun	28	Stockholm	sun	15	Sydney	sun	20	Taipei	sun	28	Tel Aviv	sun	28
Singapore	sun	28	Stockholm	sun	15	Sydney	sun	20	Taipei	sun	28	Tel Aviv	sun	28	Tokyo	sun	25
Stockholm	sun	15	Sydney	sun	20	Taipei	sun	28	Tokyo	sun	25	Toronto	sun	20	Warsaw	sun	25
Sydney	sun	20	Taipei	sun	28	Tokyo	sun	25	Toronto	sun	20	Warsaw	sun	25	Wellington	sun	22
Taipei	sun	28	Tokyo	sun	25	Toronto	sun	20	Warsaw	sun	25	Wellington	sun	22	Winnipeg	sun	18
Tokyo	sun	25	Toronto	sun	20	Warsaw	sun	25	Wellington	sun	22	Winnipeg	sun	18	Zurich	sun	20
Toronto	sun	20	Warsaw	sun	25	Wellington	sun	22	Winnipeg	sun	18	Zurich	sun	20			

Situation at 12 GMT. Temperatures maximum for day. Forecasts by Meteo Consult of the Netherlands

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MFS

US \$2.0 billion pending acquisition of UUNET Technologies, Inc.

Adviser to MFS Communications Company, Inc.

GLEACHER NATWEST

The Dial Corp

US \$2.8 billion announced corporate restructuring and spin-off of its consumer products business

Adviser to The Dial Corp

GLEACHER NATWEST

Farnell

US \$2.8 billion acquisition of Premier Industrial Corporation

Adviser to Farnell Electronics PLC

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IN BRIEF

KLM-Northwest link hits snag

KLM Royal Dutch Airline's partnership with the US carrier Northwest Airlines received a further setback yesterday when KLM announced it had suspended plans for the integration of the two airlines' global cargo operations. Ironically, Northwest enabled KLM to report a healthy increase in net profits last year. Page 18

Vig poised to bid for Sandoz arm
Vig, the German industrial conglomerate, is set to bid up to DM1.4bn (\$917m) for Master Builders Technology (MBT), a subsidiary of Sandoz the chemicals company. If successful the move would create Europe's largest building chemicals company, with sales of more than DM5bn. Page 18

Philips seeks to calm job fears
Philips, the Dutch consumer electronics company, quashed speculation that it had planned to shed several thousand jobs in its consumer electronics division over the next few years. Page 18

Deutsche Telekom rises 47%
Deutsche Telekom, the German telecoms operator to be partly privatised in November, yesterday reported a 47 per cent increase in net profits to DM5.3bn (\$3.47bn) but warned that sales this year were expected to be 10 per cent lower and would dent profits. Page 18

Air NZ deal with Ansett to take off
New Zealand's Commerce Commission has cleared the way for Air New Zealand, the national carrier, to buy a 50 per cent stake in Ansett of Australia. Page 20

LA Times halves cover price
The Los Angeles Times has halved the cover price of its main edition to 25 cents in a move to reinforce its position in its core market. Page 21

Sears head defends shoe shop sales
Mr Liam Strong, chief executive of Sears, defended his board's decision to sell 379 unwanted shoe shops to Pacia Group, where trading activities are now in the hands of administrators and receivers. Meanwhile Sock Shop, the UK retailer yesterday collapsed into insolvency proceedings. Page 22

Eurotunnel chief upbeat on refinancing
Hopes of a prompt settlement to Eurotunnel's refinancing talks were raised yesterday when Mr Patrick Ponsolle, the Anglo-French group's co-chairman, said it was "not unrealistic" for an outline refinancing plan to be in place by the group's annual meeting on June 27. Page 22

Swissair steps up battle for Alders
Swissair yesterday stepped up its campaign in its battle with BAA for the duty-free operations of Alders, the department store group. Page 22

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Chief price changes yesterday

FRANKFURT (DM)					
Daimler	532.5	+ 6.5	Herc	1200	+ 59
Deutsche	548.8	+ 8.8	Phila	600	+ 15
IG	986	+ 23	Pharm	722	- 12
Pfeil	243	- 4	Pharm	495	- 20
Pharm	310	- 10	Pharm	468	- 7
Pharm	82.5	- 11.5	Pharm		

Cadbury sells UK soft drink plants

By Roderick Oran, Consumer Industries Editor
Cadbury Schweppes sold its British soft drink plants yesterday for about £700m (\$1.1bn) in a deal designed to give it more financial and management resources to develop its confectionery and soft drink interests into global businesses.
The buyer of Cadbury's 51 per cent stake in Coca-Cola & Schweppes Beverages, its UK production joint venture with Coca-Cola of the US, is Coca-Cola Enterprises, the US bottler 44 per cent owned by Coca-Cola.
Enterprises is also buying Coca-Cola's 49 per cent stake in OCSB for a similar sum as part of its multi-billion buying spree of bottlers across Europe in recent weeks.
"We're antirally indifferent about being bottlers," said Mr Dominic Cadbury, chairman of Cadbury Schweppes. The group believes greater profits lie in 'being a brand franchiser selling concentrates to bottlers rather than in bottling itself.'
Cadbury Schweppes shares closed up 17p at 486p as the City

welcomed the initial £620m cash from the deal which will cut the group's gearing from 100 per cent to 44 per cent, give it money to seek acquisitions in confectionery and resolve some tensions between Coca-Cola and Cadbury in the US and UK.
"Cadbury Schweppes relations with Coke have got worse not better over recent years," said Mr Michael Landynore, an analyst with Henderson Crosthwaite. "I can't find too much to fault in the deal."
The two companies pooled their resources in OCSB in 1986

to accelerate growth of their brands' market shares and profits. Each company markets its own brands but franchises them to OCSB which produces, distributes and sells the drinks.
Both companies have benefited from their arrangement but analysts said their priorities were beginning to diverge as their products increasingly competed with each other.
"We didn't believe Coca-Cola would renew OCSB's Coke franchise when it expired in 2006," said Mr David Wellings, Cadbury Schweppes' chief executive.
Cadbury Schweppes said it has safeguarded its brands through an initial 15-year licensing agreement with Enterprises with a possible 10-year extension.
Lex, Page 16; Marketing strategy in a bottle, Page 21

CSFB sued for £26m over advice to brewers

By John Mason and Nicholas Denton
CS First Boston, the investment bank owned by CS Holding, is being sued by a client for its work on a deal which was one of the first public takeovers upon which CSFB advised in the UK.
CSFB acted negligently in advising Eichhoff, the Swiss brewer, on its 1990 takeover of a UK colour imaging company that turned out to be "probably" worthless, the High Court was told yesterday.
Eichhoff, a Lucerne-based family company, is suing CSFB for about £22m (\$34m) in damages, claiming it failed to give proper advice about taking over International Colour Management (ICM).
Mr Anthony Boswood QC, for Eichhoff, said: "CSFB had no conception at all of what is expected of a London merchant bank in the circumstances of an engagement such as this."
The dispute centres on Eichhoff's £14m takeover in June 1990 of ICM, a company in Newbury, Berkshire, that made specialised colour imaging equipment.
By early 1990, ICM had run into desperate financial trouble, Mr Boswood said. Its debtors and overdraft had both risen substantially and the company resorted to "possibly questionable window-dressing" in its accounts.
ICM's financial situation continued to deteriorate quickly and it needed cash to survive. A new buyer was sought. Eichhoff, a long-standing client of Credit Suisse, the commercial banking arm of CS Holding, decided to buy ICM and employed CSFB as its sole adviser.
The business suffered during the recession. After two years, Eichhoff launched the case now before the High Court. Although CSFB charged a £250,000 fee, it "failed altogether" to perform some of its duties such as carrying out proper due diligence, Mr Boswood said, adding that, had Eichhoff been given proper advice, it would never have bought ICM which "was not worth £14m and was probably not worth anything."
CSFB disputes the fact that it was engaged to carry out a formal valuation of ICM and denies negligence. "We think we gave them completely professional and proper advice. They went into the acquisition with open eyes," said Mr Francois von Hurter, co-head of European corporate finance at CSFB.
The case is expected to last about four weeks.

Bouygues in talks to form telecoms alliance in France

By David Owen in Paris, Andrew Hill in Milan and Alan Carne in London
Bouygues, the French construction group, Stet, Italy's Cable and Wireless of the UK and Veba of Germany are preparing to launch a telecoms venture in France.
Bouygues confirmed yesterday that it was in discussions with Stet, Italy's state-controlled telecommunications holding company, and also indicated that Veba and C&W, two of its partners in another company, Bouygues Telecom, were also involved.
Bouygues, which last week became the third entrant in France's fast-growing mobile phone market, said the talks covered both mobile and fixed telecoms markets.
The negotiations are understood to focus on expansion in the French market. One telecoms executive close to the negotiations said yesterday: "We expect efforts to attract customers for this venture will begin within the next few weeks."
Yesterday's disclosure comes about two weeks after it emerged that Stet was in talks on a wider alliance with Veba and C&W. Stet confirmed yesterday it was also in contact with Bouygues.
A joint venture in France would give Stet an opportunity to hit back at France Telecom, the French state company, which is teaming up in Italy with Infotrade, the telecoms joint venture between Olivetti, the Italian computer group, and Bell Atlantic, the US telecoms company.
Mr Martin Bouygues, Bouygues chairman, said yesterday that the first few days of the company's mobile telecommunications oper-

Vodafone rises 28% to £475m



Vodafone, the mobile phone operator led by Sir Gerald Whent (above), exceeded expectations with a 28 per cent rise in annual pre-tax profits to £475.1m. Story, Page 22; Lex, Page 18

First Austrian proposes to join forces with Creditanstalt

By Eric Frey in Vienna
First Austrian Savings Bank has proposed combining forces with Creditanstalt-Bankverein to create Austria's largest financial group with assets of Sch911bn (\$85bn).
Its plan to bring the two banks under a common holding company would also resolve the Austrian government's struggle to complete the privatisation of Creditanstalt.
Under the plan, a new holding company would be established by the foundation behind First Austrian and other members of a consortium formed two years ago to bid for the government's 70 per cent voting stake in Creditanstalt.
The holding company would then acquire 75 per cent of the

Barry Riley

A future savings boom looms for ageing Europe

An obvious feature of the global economy in the 1990s has been the consistent deterioration of public finances, with the ratio of debt to GDP in the OECD member countries rising from about 58 per cent in 1990 to a likely 74 per cent for 1996.
Is this trend dangerous? It depends on how easily fiscal deficits running to 4 per cent on average each year can be financed. According to a new study on *Savings and Wealth Accumulation in Europe*, jointly published in London by Merrill Lynch and Coopers & Lybrand, a surge in private sector savings during the next 10 years will provide a big offsetting demand for public sector debt.
It is easy to project Doomsday outturns for demographic trends. But the problem is understanding where the real pressure points will apply in practice. A key problem, for instance, is the progressive decline throughout Europe in the so-called "support ratio", which is the number of people of working age for every old-age pensioner. Typically, this will drop from about four in 1990 to two by about 2025.
Yet at present, actual (rather than statutory) retirement ages are falling, while unemployment among people of working age (especially the young) is rising. This is an apparently perverse response to the perceived problem.
A financial manifestation of these trends is that the present value of the net unfunded pension liabilities of several European governments runs to

Some \$150bn to \$200bn a year of extra personal savings will be generated

upwards of 200 per cent of GDP, notably for France and Italy. Forget irrelevant arguments about the 60 per cent Maastricht debt ceiling. Much more debt lurks off the balance sheet than on it.
But as the paper by David Miles and Brian Fatale explains, the same demographic pressures that are creating such deficits will also generate extra private sector saving. This is because practically all the saving is done by people aged 30 to 62, and especially from 50 onwards.
Although, in Europe, the portion of people aged over 62 is rising, and will continue to do so until at least 2040, for the time being, the 50-62 age group is expanding too. The authors' simple life-cycle model indicates that the European household savings ratio will climb for 10 years.
A second, more sophisticated, model takes other factors into account, such as interest rates, inflation and the flow of government debt. This so-called dynamic model predicts a similar upward trend in the private savings ratio but postpones the peak until about 2020.
Either way, the important implication is that \$150bn to \$200bn a year of extra personal savings will be generated across Europe, at least for 10 years. Very roughly, this will balance public sector pension liabilities. This is quite different, incidentally, from the pattern in Japan where the population structure is less favourable and the savings ratio will be trending sharply lower throughout the period between now and 2020. So Japan's days as the savings centre of the globe are numbered.
Even in Europe the problem will not be so neatly solved, because the savings will pile up, especially in the UK, Spain and Italy but not so much in Germany or France. Substantial cross-border capital flows will therefore be required to avoid fiscal and social security crises in some countries.
Moreover, it is fundamentally unsound to finance current pension outgoings through heavy debt issuance. This is to attempt to fob off the burden on to the next generation of taxpayers.
There is a better argument for pre-funding, and so building up balanced pension funds that can invest in domestic equities and overseas assets as well as government bonds. Providers of long-term savings products should enjoy a prolonged boom - though not in Scandinavia, where forces driving up private-sector savings are less powerful.
The authors' optimistic conclusion is that there will be much greater intermediation through financial markets and institutions at the expense of pay-as-you-go recycling systems, and there will be an expansion of the stunted stock markets in Germany, France and Italy.
This may well be what the business planners at Merrill Lynch and Coopers & Lybrand want to hear. But another conclusion could be that Europe's public sector borrowing binge has only just begun.

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COMPANIES AND FINANCE: EUROPE

Viag poised to bid DM1.4bn for Sandoz arm

By Jenny Leesby in London
The area is a relatively new one for SKW, which since 1989 has transformed itself from a metallurgy company...

Fresh setback for KLM-Northwest pact

By David Brown in Amsterdam
KLM Royal Dutch Airlines' problematic partnership with the US carrier Northwest Airlines received a further setback yesterday...

Philips says jobs report is 'purely speculative'

By Alice Rawsthorn
Philips, the Dutch consumer electronics company, yesterday quashed speculation that it had formulated plans to shed several thousand jobs...

Deutsche Telekom warns after 47% rise for year

By Michael Lindemann in Bonn
Deutsche Telekom, the German telecoms operator to be partly privatised in November...

PROFILE Deutsche Telekom
Annual change 1994-95: Revenue from Domestic telephony 5.9%, Mobile communications 12.6%
REVENUE, INCOME, GROUP NET PROFITS bar charts

ING Barings Latin American team joins Deutsche Morgan Grenfell

By Antonia Sharpe and Nicholas Denton
ING Barings yesterday lost much of its highly-respected Latin American equity sales, research and trading team to Deutsche Morgan Grenfell...

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Toolex Alpha N.V.
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COMPANIES AND FINANCE: EUROPE

NEWS DIGEST

OMV bolstered by Chemie Linz sale

OMV, the Austrian oil and gas group, yesterday reported a 7 per cent rise in first-quarter pre-tax profit as receipts from the sale of the Chemie Linz chemicals division made up for weak operating earnings. Pre-tax profit climbed from Sch950m to Sch1.02bn (\$83m) in the first three months while net profit edged up 1 per cent, from Sch850m to Sch900m, the company announced at its annual shareholder meeting.

But operating earnings fell 13 per cent, from Sch1.06bn to Sch940m, because of weakness in the plastics division, where operating profits tumbled from Sch240m to Sch20m. Another trouble spot was the refinery business, where earnings fell from Sch480m to Sch260m on lower prices for petrochemicals.

Other divisions posted better results. In oil exploration and production, a higher crude oil price helped OMV to swing from an operating loss of Sch300m to a profit of Sch90m. In the natural gas business, operating earnings climbed from Sch490m to Sch460m, and earnings from chemicals rose from Sch120m to Sch190m. Group sales dropped 7 per cent, from Sch19bn to Sch17.5bn, reflecting the sale of Chemie Linz.

Eric Frey, Vienna

Losses widen at Alcatel Sel

Alcatel Sel, the German unit of France's Alcatel Alsthom, the French transport, telecoms and engineering group, suffered a 1995 operating loss of about DM300m (\$197m), widening from a DM150m operating loss the year before. The company said its loss from ordinary business was about DM350m, narrowing from DM450m in 1994. Sales shrank 16 per cent to DM5.4bn.

The parent company injected DM1.3bn in fresh capital, of which DM920m was used to cover the operating loss and expenses related to the correction of its share. The remaining DM370m was used to increase capital.

Reuters, Stuttgart

ING strengthens Polish stake

ING, the Dutch financial services group, has raised its stake in Poland's Bank Slaski by 7.25 percentage points to 38.15 per cent. The bank added that it had been given the option to acquire a majority stake through the purchase of a further 20 per cent. Both the increase of its shareholding and the future option were agreed with the Polish Finance Ministry, ING said. The option, exercisable next month, is subject to final approval by Polish authorities.

The Dutch company acquired its initial 25.9 per cent stake in Bank Slaski in 1994 as part of a strategic thrust into eastern and central European markets. Bank Slaski, one of the most profitable commercial banks in Poland, had more than 1m account holders and total assets equivalent to Fl 4.2bn (\$2.46bn) at the end of 1995, and earned Fl 157m last year, ING said.

David Brown, Amsterdam

Fokker to complete 15 aircraft

Fokker, the Dutch aerospace group, said the Amsterdam district court had granted its receivers permission to allow the completion of 15 aircraft. Production of the six Fokker 50s and nine Fokker 70s will keep the bankrupt company's production lines open at least until April of next year, providing work for about 40 people.

"After it was decided to complete production of two Fokker 50s and two Fokker 70s, binding agreements have been made with clients, partners and suppliers for the conditions under which another seven Fokker 70s and four Fokker 50s will be built and delivered," Fokker said. Fokker said the decision to fill the orders was based on the idea that "delivery of these aircraft to clients would yield a financial result that will... benefit Fokker's creditors."

AFX News, Amsterdam

Finland in talks on Kemira arm

Kemira, the Finnish chemicals group, said yesterday it would start talks with the ministry of trade and industry about selling its Vihitavouri gunpowder subsidiary to the Finnish state. "If the negotiators agree, 50.1 per cent of the shares (in Vihitavouri) will be transferred at the beginning of 1997. The remainder would be acquired by the state not later than January 1, 2000, but could be transferred in spring 1997," Kemira said. The Finnish state had "defence-related interests" in Vihitavouri, which manufactures powder and ammunition and quarrying supplies. Annual net sales are about Fm150m (\$32m).

AFX News, Helsinki

Generali arm to sell Spanish unit

Assicurazioni Generali, the Italian insurance group, said its Spanish subsidiary had agreed to sell the Barcelona-based Caja de Revisión y Socorro to Spain's Aegon Union Aseguradora.

Generali said its Spanish company, La Societa Holding de Entidad de Seguros, based in Madrid, had agreed to sell the Barcelona-based group which in 1995 had premium income of more than Pta10bn (\$77.9m). Generali gave no financial details of the deal, but said it was part of a reorganisation of its interests in Spain, a nation which it called "fundamental" to Generali's strategy. Generali recorded premium income of Pta237bn in 1995 from its Spanish interests.

Reuters, Rome

Bilfinger & Berger Bau forecast

Bilfinger's Berger Bau, the German construction group, said yesterday it expected satisfactory earnings this year and a slight increase in output. It also expected 1996 output to rise 4 per cent to DM8.9bn (\$5.85bn). In 1995, output rose from DM7.64bn a year earlier to DM8.57bn. Mr Christian Roth, chairman, said the company's production capacity would be fully used into the fourth quarter of 1996 because of high orders in hand.

But the company, one of Germany's top five construction groups, said in its annual report that the German building sector was expected to shrink more than 2 per cent this year. A 4 per cent rise in output in east Germany would be insufficient to offset an expected 5 per cent fall in west Germany, Bilfinger said. Only housing investment would rise in east Germany and for the first time since unification, public sector and commercial construction would decline 2 per cent each.

Reuters, Mannheim

Norway seeks to sell 19.8% of Den norske Bank

By Hugh Carnegie in Stockholm

Norway yesterday launched its biggest bank re-privatisation issue since the loan loss crisis of the early 1990s, announcing a public offering of 19.8 per cent of Den norske Bank, a stake worth Nkr2.6bn (\$387m) at current market prices.

The offering, to Norwegian and foreign investors, will reduce the state's holding in DnB, the country's largest financial services group, to 62 per cent and follows a similar reduction in the government's holding in Christiania Bank and the sale of all its shares in Fokus Bank and Union Bank of Norway.

The state, which was forced to pump Nkr25bn into the banking system when a spate of loan losses threatened the banks with collapse at the turn of the decade, is now seeking to claw back a significant proportion of the taxpayers' money.

The sale of the latest DnB stake should bring to more than Nkr80bn the total raised in re-privatisation issues.

But the Labour government has sparked some controversy by remaining committed to retaining a majority stake in both DnB and Christiania, the two biggest groups, at least until next year.

It then intends to seek parliamentary approval to reduce

Norsk Hydro, the Norwegian conglomerate, will be investing more than \$350m in Asia over the next three to four years, according to Mr Thor Hakstad, executive vice-president, AP-DJ reports from New Delhi.

The investments included those in petrochemical projects planned in the Middle East, Malaysia and India, he said. The company was also planning a "small venture" in China in extrusions for the automobile industry.

The projects in Asia are expected to cost a total of more than \$1bn, with Norsk Hydro's share about 25 per cent of the total cost. Mr Hakstad said the petrochemical project in the Middle East was likely to cost about \$600m. He declined to give details of the petrochemical project planned in India. "It is in an early stage. But here our exposure might be more than 25 per cent," he said.

The holdings to stakes of about one-third. But it does not at present want to go further, arguing that the state should remain the principal owner to

which holds the state's bank shareholdings, will take place from June 10 to June 21.

SBC Warburg is to be global co-ordinator and adviser for the overall offering. Co-lead managers for the international offering will be Morgan Stanley and Alfred Berg, with Fondfinans and DnB Fonds leading the Norwegian offering.

No pre-set division of the offering between domestic and overseas investors has been established by the Government Bank Investment Fund. But it said there would be an unprecedented marketing effort made in Norway to attract retail investors.

The price is to be set on June

24 after a global book building process. DnB shares closed yesterday at Nkr20.40, up Nkr0.50.

Mr Jan Hopland, the investment fund's chief executive, said he believed the timing was good for the issue as the Norwegian economy was strong and DnB was returning solid results having long since overcome its loan loss problems.

In the first quarter, DnB reported a record net profit of Nkr770m, up from Nkr555m in the same period last year. However, the results were flattened by generous write-backs of sums previously set aside for loan losses and low tax charges. Neither trend is sustainable, and DnB warned it had to further reduce costs.

Cofinec launches \$80m global offering

By Virginia Marsh in Budapest

Cofinec, the rapidly growing central European packaging group founded in 1989 by Mr Carlo De Benedetti, the Italian industrialist, has launched a global offering to raise up to \$80m. The company also announced yesterday it was to list on the Luxembourg and Budapest stock exchanges. The latter listing will make it the first non-Hungarian company to join the Budapest market.

Most of the proceeds of the

offer will go to shareholders, which include Cerus, the French-registered holding company which groups Mr De Benedetti's non-Italian business interests. Cerus owns 45 per cent of Cofinec's existing share capital. The move is in line with plans by Mr De Benedetti, who is also chairman of Olivetti, the troubled office equipment group, to sell non-core assets and reduce debt.

The offering, which will include a capital increase, is for more than 60 per cent of

the company, it will include an international placement of Global Depository Receipts, each representing one share, and a much smaller public offer in Hungary. The price range for the international offering is Ft200-Ft225, with Barings and Creditanstalt Securities the joint global co-ordinators.

The European Bank for Reconstruction and Development is expected to sell its small stake in the company. Cofinec also has a 50 per cent

stake in Krpaco, a large Czech packaging company, and last month opened a plant in Poland.

The listing will boost the BSE, which is short of good quality stocks. The BUX index of the BSE, which has only 41 stocks with total capitalisation of about \$3.5bn, closed up 23 points yesterday at 2,945.

Cofinec's consolidated turnover was FF975m (\$180m) in 1995. Operating profit was FF60m, while net income rose 20 per cent to FF17m.

Paris appoints Béchat as head of Snecma

By David Buchan in Paris

Mr Jean-Paul Béchat was yesterday appointed by the French government to the board of Snecma to replace Mr Bernard Dufour, who was last week dismissed as head of the state-owned aeroengine company.

The 53-year-old Mr Béchat has been head of the SNPE explosives company since 1994, but before that spent most of

his career at Snecma. His priority is expected to be to patch up Snecma's relations with its long-term partner, General Electric of the US, which deteriorated under Mr Dufour.

The French government had become concerned that the rift with GE would undermine the prospects of the loss-making Snecma returning to profit and being privatised. It is now considered possible that GE may soon take a stake in Snecma.

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TOTAL 1996 ANNUAL GENERAL MEETING

TOTAL SHAREHOLDERS MEET IN ANNUAL AND EXTRAORDINARY MEETINGS

June 4, 1996
Annual General Meeting

June 10, 1996
Dividend Declaration

June 10 to July 3
Ex-dividend date

June 10 to July 3
Period to exercise option to receive dividend in shares

From July 24, 1996
Payment of dividend in cash

TOTAL shareholders met on June 4, 1996 for their annual and extraordinary meetings under the chairmanship of Thierry Desmarest, Chairman and Chief Executive Officer. They approved all of the proposed resolutions, as well as the 1995 accounts and the payment of a dividend net of tax credit of 8.70 French francs a share, up 9% from 1994. Tax credit amounts to 4.35 francs a share. Shareholders were again given the option of taking their dividend in shares, with dividend rights as of January 1, 1996, at a price per share of 329 francs.

Lord Alexander of Weedon and Mr Bertrand Jacquillat were elected to the Board of Directors for three-year terms. Shareholders also approved the change in the By-Laws following the reduction in the French State's interest in TOTAL to less than 1%.

Quotes from the Chairman

In his comments on TOTAL's performance in 1995, Mr Desmarest said that "I have set as a goal for our company the rapid improvement in return on equity, to 10 percent in an initial phase. We should reach this figure in 1998, if we conservatively assume a business environment that is similar to the 1994 and 1995 average. I am convinced that we will be able to raise ROE even higher over the medium term."

"Improved profitability will result both from growth in business and from productivity gains. While it is clear that fast growing businesses like Upstream and Chemicals will benefit from scale economies as volumes rise, slower-growing businesses will be asked to make special efforts to reduce fixed costs. For example, our dedication to further lowering the break-even point at our refineries is essential for the return of the Downstream sector to a better profitability. Even greater efforts must be made in mature markets in the United States and Europe. In the US, we have decided to reduce refining capacity by closing the Ark City refinery. In Europe, there is no way to avoid participating, in one way or the other, in an industry-wide restructuring, especially to France".

In speaking about early 1996, Mr Desmarest also indicated that "the Upstream business has improved its performance, thanks to increasing production outside the Middle East by more than 20 percent, together with stronger oil prices and a slightly higher dollar compared to the 1995 average. Downstream has been affected by contrasting trends: the dollar-franc exchange rate improved slightly, refining margins remained poor (albeit slightly better than in 1995), and marketing in the United Kingdom suffered a difficult price war. The Chemicals business has benefited from substantial growth through acquisitions, but has suffered from flat demand in certain European markets. These factors were reflected in the Company's first-quarter sales, which increased by 14 percent."

Business growth coupled with "slightly better business conditions than in 1994 and 1995 and Company-wide efforts to improve productivity should lead to a substantial increase, of about one-third, in operating income over the first five months of 1996 in relation to the year-earlier period".

The 1995 Annual Report may be obtained upon request to TOTAL, Corporate Communications



http://www.wctnet.fr/total
TOTAL, Tour TOTAL, 24 Cours Michelet 92069 Paris La Defense Cedex France

COMPANIES AND FINANCE: ASIA-PACIFIC/INT'L

NZ clears way for Air New Zealand-Ansett deal

By Terry Hall in Wellington and Bruce Jacques in Sydney

New Zealand's Commerce Commission, the country's competition watchdog, yesterday cleared the way for the national carrier, Air New Zealand, to buy a 50 per cent stake in one of its main competitors, Ansett of Australia.

The eventual price, still being negotiated, is likely to be between NZ\$325m and NZ\$350m, reflecting Ansett's declining profitability.

Earlier this year the New Zealand Commerce Commission refused to approve the TNT-Air New Zealand deal because of monopoly concerns over the future of Ansett New Zealand, Air New Zealand's main domestic competitor.

News Corporation then offered to buy Ansett New Zealand and operate it as a stand-alone company, a move also approved yesterday by the commerce commission.

Mr David Mortimer, TNT's managing director, said his company and the others hoped to conclude the deal by the end of this month.



Ken Cowley: approval sought from Australian regulators

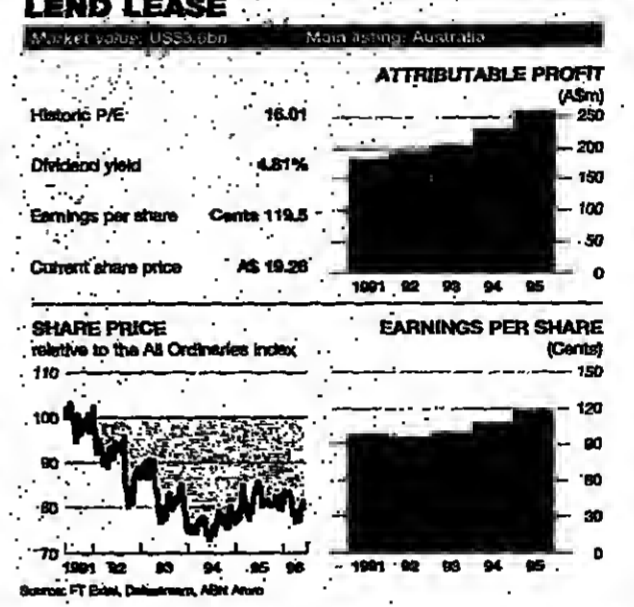
Mr Ken Cowley, Ansett's chairman and chief executive who is also chief of the Australian operations of News Corp, said: "Now that we have settled the New Zealand regulatory issues, we look forward to regular resolution of the regulatory steps in Australia to enable us to conclude this major transaction."

Lend Lease to raise A\$500m from sale of Westpac shares

By Bruce Jacques in Sydney

Lend Lease, the Australian financial services group, is set to raise about A\$500m (US\$401m) through the sale of a large part of its shareholding in Westpac, the Australian bank.

Lend Lease announced yesterday it would offer 100m to 120m Westpac shares - representing about 6 per cent of the bank's capital - to institutional investors through an issue of four-year warrants.



The announcement said the expected abnormal profit from the deal would be largely offset in the company's June 30 annual results by provisions against overseas and technology investments. Lend Lease shares rose 13 cents to A\$19.25 on Australian stock exchanges yesterday.

The Australian government will today announce details of the sale of its 51 per cent shareholding in the Commonwealth Bank. With the bank's shares closing unchanged yesterday at A\$10, the sale is expected to raise about A\$1.5bn.

Metropolitan Life records 44% rise at halfway stage

By Mark Astrup in Johannesburg

Metropolitan Life, the South African insurer controlled by New Africa Investments, the country's largest black-owned conglomerate, has posted a 44 per cent rise in attributable profit for the six months to March, from R27m to R44m (R12.4m).

Strong gains in its predominantly black market boosted premium income by 33 per cent to R962.7m, against R716.4m. Earnings per share rose 42 per cent from 55 cents to 79 cents, and the dividend rose proportionally to 51.5 cents.

Income from investments rose by 32 per cent to R235.1m, compared with R176.6m, helped by a sustained bull run on Johannesburg equities. The market value of MetLife's investment assets - cited by several analysts as the best indicator of MetLife's likely performance in the second half - increased 32 per cent from R7.7bn to R9.5bn as total assets topped R10bn.

TOTAL NOTICE TO SHAREHOLDERS

PAYMENT OF DIVIDEND

The Annual General Meeting of Shareholders held on June 4, 1996 has set the 1995 dividend at FF8.70 per share. A tax credit of FF4.35 will be added to this dividend.

Payment of the dividend, the amount of which will be dependent on the terms of the double tax conventions between France and Great Britain, will be settled upon presentation of the coupon and completion of form RF 4 CB.

Residents may lodge this form with the Bank acting as their agent, either in France or in the United Kingdom, at any time up to December 31 of the second year following the collection date of the coupons. As a result of French legislation on the "dematerialisation" of securities, payment of the coupons will be made through the banks with which the securities have been deposited.

The Annual General Meeting has decided to offer each shareholder the option to receive the 1995 dividend either in cash or in shares; the issue price of such shares - carrying dividend and voting rights effective from January 1, 1996 - has been set at FF 329 per share.

Shareholders opting to receive the dividend in the form of shares will be required to make such election between June 10, 1996, the dividend record date, and July 5, 1996.

Any shareholder who has not made such election by July 5, 1996, shall automatically receive the dividend in cash, payable as of July 24, 1996.



TOTAL SOCIETE ANONYME CAPITAL STOCK: FF1,814,726,050 P.G.S. NANTERRE B 542 081 180 HEAD OFFICE: TOUR TOTAL - 24 COURS MICHELET, PUTEAUX (HAUTS DE SEINE) FRANCE

44
National Financiers, S.N.C.
US\$100,000,000
Collared floating rate notes
due December 1998

The notes will bear interest of 6.25% per annum for the interest period 5 June 1996 to 5 December 1996. Interest payable on 5 December 1996 will amount to US\$158.85 per US\$1,000 note and US\$3,177.08 per US\$100,000 note.

Agent: Morgan Guaranty Trust Company
JPMorgan

CREDIT COMMERCIAL DE FRANCE
FRF 500,000,000
REVERSE FLOATER BONDS DUE 1998
ISIN CODE: XS0041411963

For the period from June 3, 1996 to December 3, 1996 the new rate has been fixed at 10.8843% P.A.

Next payment date: December 3, 1996

Coupon of FRF 534.72 for the denomination of FRF 10,000 FRF 5 347.16 for the denomination of FRF 100,000

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SOCIETE GENERALE BANK & TRUST LUXEMBOURG

NESTLÉ S.A., CHAM and VEVEY

Payment of dividend

Notice is hereby given to shareholders that following a resolution of the General Meeting of shareholders held on May 30, 1996, the following dividend for the business year 1995 will be paid to them as from June 5, 1996:

gross CHF 26.50 per share
less Swiss federal withholding tax of 35%.

All dividends will be paid by bank transfer to the shareholder's account or by cheque, in accordance with the instructions received from the shareholder.

Chem and Vevey, May 30, 1996 Switzerland The Board of Directors

ALLIANCE LEICESTER
Alliance & Leicester Building Society
£200,000,000
Floating Rate Notes due 2000

For the interest period 31st May, 1996 to 30th August, 1996 the Notes will carry a rate of interest of 6.275 per cent, per annum with interest amounts of \$156.02 per £10,000 principal and \$1,560.19 per £100,000 principal, payable on 30th August, 1996.

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Hambro Pacific in HK bank alliance

By Louise Lucas in Hong Kong

Hambro Pacific, the Hong Kong-based corporate finance advisory arm of Hambro, the London-listed merchant banking and financial services group, has taken a domestic commercial bank on board in an attempt to expand its business in the colony.

The move is in line with predictions of a shake-out within the banking community in Asia.

The newly-created company will look at opportunities in China when they arise, but Hong Kong is likely to continue as the predominant source of earnings.

To date, Hambro Pacific has been involved in areas such as mergers and acquisitions in the colony, acting for both the government and private corporations.

INDONESIA FUND LIMITED TO THE HOLDERS OF WARRANT DEBS

Your attention is drawn to your right to subscribe for Ordinary shares of US\$0.10 each of INDONESIA FUNDO LIMITED ("the Company") and such rights may be exercised in the manner set out below from 5th June 1996 to 10th July 1996. In order to exercise your subscription rights, your instruction should be accompanied by a payment equal to US\$0.10 for each Ordinary share for which you are subscribing.

The following information may help you to decide whether or not to exercise your subscription rights this year. The middle market quotations from one of the independent market makers to the Company's Ordinary shares and Warrants were:

	Ordinary Shares of US\$0.10 each US\$	Warrants US\$
1st December 1995	1.25	2.50
2nd January 1996	8.50	2.625
1st February 1996	8.25	2.875
1st March 1996	8.13	2.875
1st April 1996	8.125	2.875
1st May 1996	8.25	2.875
28th May 1996	8.13	2.875

The new Ordinary shares resulting from subscription will be allotted no later than 18th July 1996 and will rank pari passu in all respects with the existing issued Ordinary shares of the Company.

Application will be made to the Council of the London Stock Exchange for the Ordinary shares allotted pursuant to the exercise of the subscription rights to be admitted to the Official List.

Exercise of your subscription rights should not result in any liability to Capital Gains Tax. A liability to Capital Gains Tax or Capital Transfer Tax may arise, however, if you subsequently dispose of, or nominate some other person to receive, an Ordinary share arising from subscription. If you are in any doubt as to your tax position you should consult your professional adviser.

If your subscription rights are not exercised on 5th July 1996 you will still have the right to exercise your subscription rights during the years 1997-2004 inclusive.

This notice is now in accordance with the terms of the Warrant Deposit Agreement. It is not to be taken as a recommendation to holders of Warrants to exercise their subscription rights or otherwise.

By Order of the Board
Jupiter Asset Management Limited
Secretaries

Morgan Guaranty Trust Company of New York
Avenue des Arts 33,
1040 Brussels, BELGIUM

4th June 1996
JPMorgan

European marketing strategy in a bottle

Coca-Cola is streamlining distribution as competition intensifies, writes Roderick Oram

W e're redrawing the Coca-Cola map of Europe," a senior executive enthused yesterday as the company unveiled a \$1.2bn (\$1.9bn) deal in the UK, the latest in a series across the continent over the past few months.

Responding to rapidly changing market conditions in eastern and western Europe, Coca-Cola is pulling together an array of bottlers for the soft drink it is trying to make ubiquitous. It is retaining the role of brand manager, marketer and franchiser while it hives off production to "anchor bottlers", large multinational companies which it believes know more about production and distribution than it does.

The strategy is an attempt to replicate its success in the US over the past 10 years. During this time it has devolved most of its production to Coca-Cola Enterprises, a listed company in which it has a 44 per cent stake, and other big bottlers. As the US market stagnates, it is turning its attention to foreign markets where soft drink consumption remains far lower than in the US.

In eastern Europe, its main bottler has become Coca-Cola Amatil, the Australian-listed company which in the past few years has moved into 11 European countries.

In western Europe, Coca-Cola's first foray in this strategy was to sell its Dutch bottling company in 1993 to Coca-Cola Enterprises. The



Rolling along: bottler Coca-Cola Enterprises has spent \$3bn on recent acquisitions

sale price was \$366m but that included two US bottlers as well. Last month, it sold bottlers in France and Belgium to Enterprises for \$915m.

Yesterday, Enterprises paid \$1.2bn for Coca-Cola & Schweppes Beverages, owned 49 per cent by Coca-Cola and 51 per cent by Cadbury Schweppes, the UK confectionery and soft drink maker. In total, Enterprises has spent about \$3bn on recent acquisitions, including one in the US, which will push its net debt to just over \$7bn, or about 62 per cent of total capital.

Enterprises argues its experience in bottling will enable it to grow these national businesses. The Dutch operations, for example, have increased

profits at an annual rate of 23 per cent since it took them over. In the UK, CCSB is a highly regarded operator, but it can improve by drawing on the expanding bottling network, Enterprises says.

This network will also help Coca-Cola better serve retailers, restaurateurs and other customers who are becoming increasingly multinational. "Coca-Cola Enterprises has very real skills to bring to that equation," says Mr Neville Islell, president of Coca-Cola's Greater Europe division.

Coca-Cola is not devolving all its bottling. It has just pulled together, for example, its east German bottling into a

new venture with two independent southern German bottlers.

Coca-Cola, Enterprises and Cadbury Schweppes all expressed satisfaction yesterday with their UK deal. Coca-Cola gains an anchor bottler which will be far more closely tied to it than was the joint venture with Cadbury Schweppes; Enterprises becomes the anchor bottler in the largest European carbonated soft drinks market; and Cadbury Schweppes resolves the growing dilemma it had with the joint venture.

Cadbury Schweppes yesterday played down growing tensions between it and Coca-Cola. Not only has the UK become a much bigger threat

to Coca-Cola in the US since the UK group's acquisition of Dr Pepper/Seven-Up last year, but their strategies were diverging in the UK. Coca-Cola wants to push Coke; Cadbury Schweppes wants to push its own range of soft drinks such as Schweppes tonic, Canada Dry, Oasis and Dr Pepper.

It was increasingly hard to resolve those tensions with a jointly-owned bottler. A cleaner solution has been for Cadbury Schweppes to cease bottling and franchising its brands to Enterprises.

But behind the deal lies an intriguing bet on the future of the UK soft drinks market. Although per-capita consumption in the UK is lower than the US, not all analysts believe the market will grow rapidly. Moreover, it will remain subjected to intense pricing pressures from retailers and minor brands.

Against this background, Cadbury Schweppes is wagering it can make more money selling soft drink concentrates to the bottler and marketing hard to grow its brand shares. Enterprise believes its skills and growing Europeanisation of soft drinks offer it a big opportunity. Coca-Cola has hedged its bet by becoming a franchiser with a captive bottler.

Conceivably, all three are right, as they were in the US. But there lurks the possibility that retail competition and consumer patterns in Europe are more challenging than those in the US.

Futures executives seek rule clarification

By Laurie Morse in Chicago

Futures industry executives will today ask Congress to clarify US laws governing foreign exchange trading in a hearing to be held in Washington.

The hearing, before the Senate agriculture committee, will re-open the issue of derivatives regulation in the US. Derivatives legislation, under the Commodity Exchange Act, was last overhauled in 1992.

US futures exchanges will make several proposals to the committee, including a request that exchanges be exempted from making costly investments in technology to track transactions.

More pressing is the uncertainty created by the Treasury amendment to the act which appears to exempt interbank foreign exchange trading from Commodity Futures Trading Commission oversight. The US Supreme Court last week agreed to consider a landmark case that could define the regulatory boundaries of the agency for cash currency trading.

Futures exchanges are seeking legislative clarification with would put them on equal regulatory footing with over-the-counter currency markets.

"If off-exchange, professional-institutional interbank markets in these instruments are to be exempt completely from regulation, the exchange market in the same instruments should enjoy the same exemptive treatment," Mr Patrick Arbor, chairman of the Chicago Board of Trade, will tell the committee today.

The US futures broking community will similarly seek clarification of the Treasury amendment. "The Futures Industry Association is concerned about the myriad legal issues that must be addressed when institutional clients enter into privately negotiated OTC transactions. Not only are these issues complex, but the consequences of an OTC transaction being re-characterised as a futures contract are potentially draconian," said Mr Laurence Molner, chairman of the FIA.

NEWS DIGEST

Moody's upgrades Greyhound Lines

Greyhound Lines, the struggling US bus company, yesterday received a nod of approval for its new management strategy when Moody's Investors Service, the US credit rating agency, upgraded its debt. But the shares, which have recently bounced back from earlier lows on recovery hopes, were off 8 1/2% at 34 1/2 in early trading.

Greyhound has been hit by a combination of low-fare competition from US airlines and an unsuccessful attempt to respond to that threat by cutting longer routes and setting up hub-and-spoke operations. Under Mr Craig Lentzsch, who took over as chief executive at the end of 1994, the company has restored long-haul routes, improved services and cut fares.

Moody's said it was upgrading Greyhound's senior notes to single-B3 from Caa, and its convertible debentures to Caa from Ca, citing improved operational and financial performance. It also assigned a single-B1 rating to Greyhound's new, \$80m credit facility, which is secured against the company's assets. "A new management team, in place for about a year and a half, has employed a back-to-basics strategy that has improved day-to-day operations and boosted ridership," Moody's said. It added that long-term profitability depended on the success of revenue initiatives now under way.

Richard Tomkins, New York

Black shakes up Southern board

Mr Conrad Black, the international publisher, is proposing to replace all five independent directors of Southern, the Canadian newspaper chain he now controls. The new directors proposed are Mr Derek Burney, a former Canadian ambassador in Washington and a senior executive at BCE, the telecommunications group; Mr Charles Dubin, retired Ontario chief justice; Montreal lawyer Mrs Donna Kaufman and Mr Yves Fortier - the latter a former Canadian ambassador at the UN; and Mr Stephen Jarislowsky, a Montreal pension fund manager.

They would replace five directors openly criticised by Mr Black for blocking Southern's return to adequate financial returns. The directors have said they were acting in all shareholders' interests - particularly the minority holders.

Last month, Mr Black's Hollinger holding company bought out Power Corp of Canada's 20.5 per cent stake in Southern, giving it 41 per cent control. It plans to raise this to 50 per cent through private share deals and then offer Hollinger stock for the remaining Southern shares. Robert Gibbens, Montreal

Western Canada oil expansion

Western Canada's oil sands and heavy oil industry is starting a C\$5.6bn (US\$4.1bn) five-year expansion plan spurred by favourable technical developments and a better tax regime. Over the next 25 years, the industry says, production of synthetic crude could triple from 400,000 b/d to 1.2m b/d, with investment of a further C\$25bn.

The industry is now concentrated in the Fort McMurray area of northern Alberta, where the two big tar sands producers, Syncrude Canada and Suncor, operate large mining and treatment operations. The resulting synthetic crude is pipelined to Edmonton for direct processing. Syncrude is investing C\$2bn over four years to bring output to well over 200,000 b/d. It is mainly owned by Alberta Energy, Imperial Oil, PanCanadian Petroleum, Petro-Canada, and Canadian Occidental. Suncor will invest C\$900m to upgrade and expand output.

Other investments totalling about C\$2.5bn will be made to develop reserves or raise output at other oil sands and heavy oil locations in southern and northern Alberta in the next four years. Robert Gibbens

LA Times halves cover price of main edition

By Christopher Parkes in Los Angeles

The Los Angeles Times, banner-carrier for the Times Mirror publishing group, has halved the cover price of its main edition to 25 cents in an aggressive move to reinforce its position in its core market.

Falling newspaper prices made the cut possible, officials said, and followed an increase from 35 cents in January in response to higher paper costs. However, the cover price will remain unchanged outside the broadsheet's main markets in

LA County, Orange County, Ventura County and the San Fernando Valley. It costs \$1 in Santa Barbara, 80 miles north of LA.

The move follows almost a year of restructuring under new chief executive, Mr Mark Willes, a former senior General Mills manager whose first actions included cutting almost 2,500 jobs in the group.

Although other papers and publications have been closed or shrunk, the LA Times has been given special attention. Foreign editorial coverage has been reduced and local affairs

have been drawn in sharper focus.

Most circulation and advertising sales efforts are now concentrated in Los Angeles and environs, where the paper faces especially fierce competition from the Orange County Register to the south and The Daily News, which serves the inland San Fernando Valley.

National papers, including USA Today and The New York Times, and dozens of free-sheets also contribute to the pressure.

Because of local conditions, the LA Times' cover price has

been pinned at 25 cents in these bordering markets for several years. According to company data, circulation in Orange County has increased 20 per cent since 1988, while total sales have fallen almost 9 per cent over the same period.

Part of this decline - a fall in weekday sales of 37,000 was reported last year - is the result of withdrawal of home delivery services in areas "of no interest to our main advertisers", an official said. Delivery has been stopped in San Francisco, central California and Arizona, for example.

Meanwhile, the group claims to have improved its service for Los Angeles' large Spanish-speaking community. Following the closure of the Jossmaque Nuestra Tiempo, a free-sheet co-production between Times Mirror and LA Opinion, is now being distributed to 200,000 homes a week.

Mr Willes, who in January said he felt there was "some room to breathe", has set himself a target of a 50 per cent increase in earnings per share in his first year. Observer, Page 15

KfW's 1995 Report on Cooperation with more than 100 Developing Countries is now available.



KfW - the German Development Bank

On behalf of the Government of the Federal Republic of Germany, KfW finances investment projects and project-related consulting services in developing countries ("Financial Cooperation"). For this purpose, KfW has committed DM 3.5 billion from Federal Budget funds in loans and grants in 1995.

The 1995 Annual Report "Perspectives of Financial Cooperation" is now available. Numerous practical examples, ranging from the protection of the environment and natural resources in Niger, sewage disposal in Turkey, to family planning in Pakistan, are presented. They illustrate the manifold aspects of KfW's cooperation with more than 100 developing countries.

The primary objective of all efforts is to permanently improve the living standards of the people in Third World countries through development projects. Germany thereby renders an important contribution towards the safeguarding of global peace.

For further information on Financial Cooperation with developing countries, please contact us to obtain KfW's 1995 Annual Report "Perspectives of Financial Cooperation" or to receive additional information on our work in general. We look forward to hearing from you.

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ACCOLADES IN ASIA

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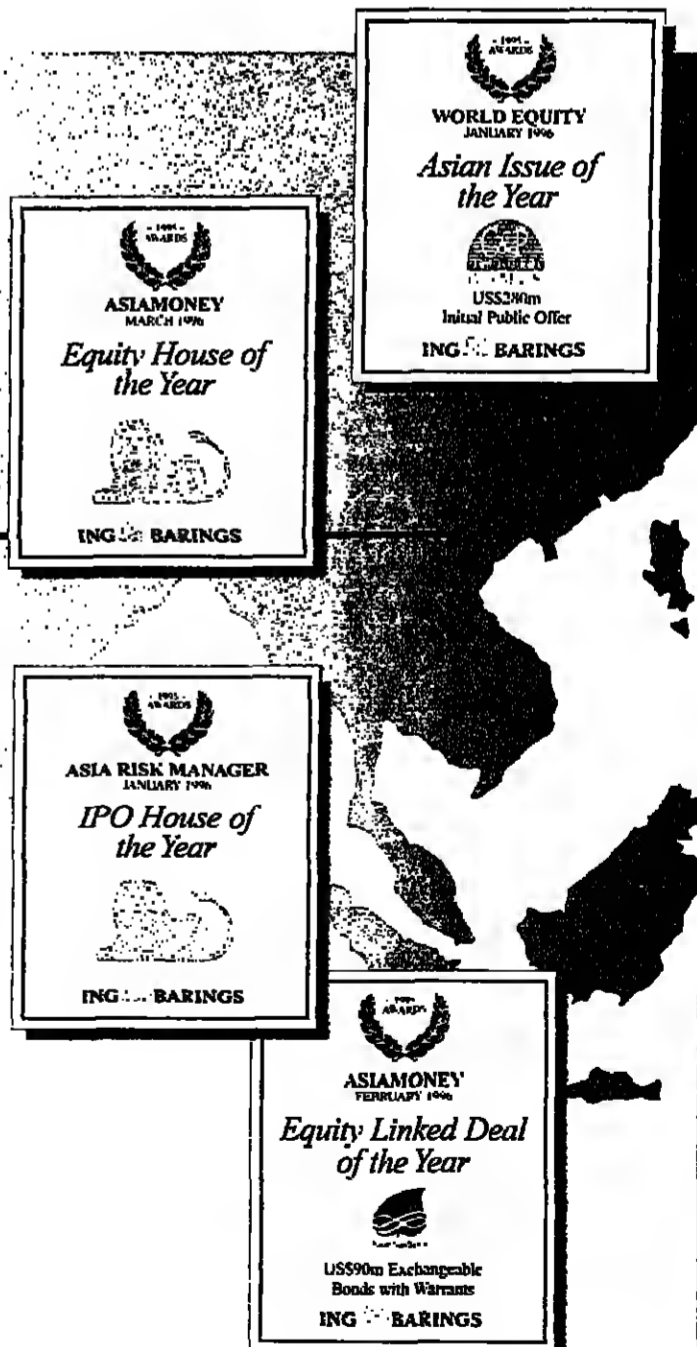
In January 1996 World Equity magazine voted ING Barings' public offer for C&P Homes the Asian Issue of the Year.

In the same month Asia Risk Manager voted us IPO House of the Year.

In February 1996 Asiamoney voted our Exchangeable Bonds with Warrants deal for Siam Sindhorn the Equity Linked Deal of the Year.

And, not surprisingly, in March 1996, it voted us Equity House of the Year 1995.

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of 7,800,000 new ordinary shares of 50p each at 450p per share payable in full on application

Table with 4 columns: Authorised, Issued and fully paid, Number, and Amount. Shows 20,000,000 authorised shares and 11,180,140 issued shares.

PPL is one of the world's leading companies in the transgenic production of human proteins for therapeutic and nutritional use.

Copies of the prospectus of PPL, dated 4 June 1996, which has been approved by the London Stock Exchange as required by the Listing Rules made under Section 142 of the Financial Services Act 1986...

PPL Therapeutics plc, Roslin, Edinburgh, EH25 9FP. Hambros Bank Limited, 15 Park Square East, Leeds LS1 2LF.

5 June 1996

TriGem Computer Inc.

Notice of Bondholders' Additional Option to Redeem Bonds on 4th June, 1998 and Rights to Revoke Notices of Redemption

To the Holders of the Company's U.S. \$30,000,000

3 1/2 per cent. Convertible Bonds due 2005 (the "Bonds")

NOTICE IS HEREBY GIVEN that following the execution by TriGem Computer Inc. (the "Company") and Bankers Trust Company Limited (the "Trustee") of a Supplemental Trust Deed dated 12th April, 1996...

THE REGENT MOGHUL FUND LIMITED

Notice is hereby given that the directors of The Regent Moghul Fund Limited (hereinafter referred to as "the Fund") have decided to continue the temporary suspension of valuations and dealings of the Fund for a further period of six months until 28 November, 1996.

By Order of the Board Terence NG Corporate Secretary TN/ml Date: 4 June, 1996

CREDIT LOCAL DE FRANCE FRF 500,000,000 REVERSE FLOATER BONDS DUE 1999. Includes coupon rate and principal paying agent information.

EUROPEAN COAL AND STEEL COMMUNITY FLOATING RATE NOTES DUE 1997. Includes coupon rate and principal paying agent information.

AKZO NOBEL Pursuant to the Dutch Major Holdings in Listed Companies Disclosure Act ("Wet Melding Zeggenschap"). Akzo Nobel N.V. - formerly Akzo N.V. - states that it has been informed by N.V. Arnhemse Maatschappij tot het houden van aandelen Akzo Nobel, Herengracht 420, 1017 BZ Amsterdam, the Netherlands...

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COMPANIES AND FINANCE: UK

Swissair offers £145m for Alders arm

By Lisa Wood Swissair yesterday tried to seize the initiative in its acrimonious battle with BAA for the duty free operations of Alders, the department store group. Alders said Swissair had indicated in a letter to investors that it would make a firm offer of £140m for 40 per cent of Alders' shareholders give their support. Swissair had

asked the shareholders to respond by close of business tonight. Alders, which until now has said the BAA bid of £130m was the only firm offer it had received, took the unusual step of announcing it would seek "clarification of the respective positions of Swissair and BAA". It acknowledged the situation had changed and asked shareholders to take no action. "For the first time there is what appears to be a sensible offer which shareholders can properly consider," it said. BAA will decide on its next move this morning. It declined to comment on whether it would consider increasing its offer. "We understand that Swissair has made a seventh conditional offer, albeit of no greater value and with no more guarantees than the others. However, we will consider the matter in the morning."

SBC Warburg, on behalf of Swissair, has said that subject to the support of Alders' shareholders it will make a cash offer on terms "which in all material respects will be the same as those applicable to the proposed sale to BAA", which was announced on May 17. Swissair, it is claimed, changed the value of its offer for Alders International, the duty free arm of Alders, as many as six times during talks in April and May. When the deal was announced Alders said the BAA bid was the only firm one that it had received and agreed to recommend it to an extraordinary meeting on June 10. Swissair then claimed that it had tabled an offer of £145m, which Alders had chosen to ignore. The main shareholders have declined to comment on their position.

Receiver for Sock Shop

By William Lewis, Ross Tieman and Norma Cohen Sock Shop yesterday became the final part of the Facia Group, previously the UK's second-largest privately owned retailing chain, to enter insolvency proceedings, as institutional shareholders criticised Sears' relationship with Facia. Yesterday morning KMPG, the accountancy firm, was appointed as receiver to Sock Shop by United Mizrahi Bank, which is owed £7.3m by Facia. KMPG will now try to find a buyer for Sock Shop's 97 retail outlets. It is the second time in six years that Sock Shop, a niche retailer, has entered insolvency proceedings. KMPG has also been appointed by United Mizrahi Bank as receiver to about 500 of Facia's speciality outlets, including Contessa and Torq. Grant Thornton has been appointed as receiver to Salisbury. On Monday the High Court appointed Price Waterhouse as administrator to 380 shoe outlets including the famous Harvey Willis and Curries. PW said

last night that it was "unclear who owned" those shoe shops. KMPG says they are owned personally by Mr Stephen Hinchliffe, Facia's chairman. Last night Mr Hinchliffe said he was still trying to raise the finance to pay off United Mizrahi Bank and retake control of the shops in receivership. KMPG said it had not yet received an offer from Mr Hinchliffe, but that there had been approximately 30 "serious expressions" of interest from potential purchasers of the companies in receivership, including Sock Shop. Mr Alan Barrett, Price Waterhouse's administrator, said that he also hoped to find buyers for the shoe businesses. On Monday Sears successfully petitioned in the High Court for Price Waterhouse to be appointed as administrators after money owed to it by Facia grew to about £26m. Sears has made total provisions of £73.8m following the sale of the licences to occupy 380 shoe outlets to Facia last August and February. Following the sale, Mr Barrett said Sears continued to



Stephen Hinchliffe seeks funds

hold the leases of the properties and pay the rent. It had also been contracted by Facia to carry several management tasks including the paying of staff. Mr Hinchliffe said that Facia had been in a commercial dispute with Sears.

Vodafone beats expectations

By Alan Cane Vodafone, the world's fifth largest mobile phone operator, announced a 26 per cent rise in pre-tax profits to £475.1m (£722m) in the year to March 31, exceeding City expectations of £450-£470m and confirming its return to growth after a disappointing performance the year before. The shares rose 4 1/2p to 254 1/2p, 455m. The results indicate that Vodafone, has tackled the problems of fraud, bad debt and "churn" - the proportion of subscribers who fail to renew contracts - which had held back profitability in the UK last year while investments abroad have either moved, or are moving, into profit. Global turnover rose 22 per cent to £1.40bn. Profits before tax in the UK were £492.8m, compared with £399.5m, on a turnover of £1.24bn, up from £1.06bn in continental Europe. The group fell into a loss of £1.6m, from a profit of £2.2m, on turnover of £75.7m, up from

£47.8m. In the rest of the world it reduced losses to £18.4m against £44m on turnover of £33.6m (£24.2m). Of its overseas licences, Pacific Link in Hong Kong, Panafon in Greece, Vodacom in South Africa, Telecel in Malta and Vodafone SA in France were already profitable and the overseas portfolio was expected to turn in profits this year. Sir Gerald Wheat, group chief executive, believed the best overseas licences had been issued and said group strategy was to increase its holdings in its overseas operations. Less than half the overseas portfolio was consolidated at present, therefore profits growth would accelerate markedly on consolidation. Vodafone's prospects have been enhanced by its success in tackling churn. At its worst last year it was experiencing churn of more than 26 per cent; now it is down to 25.8 per cent. The group also seems to be having success in attracting new subscribers.

Natl Grid allays regulatory fears

By Simon Holberton National Grid Group, the privatised operator and owner of the high voltage electricity grid in England and Wales, yesterday sought to allay investor fears about its impending regulatory review by claiming that comparisons with Transco, the British Gas pipeline subsidiary, had been overdone. It also sought to reassure investors about Energis, its telecommunications subsidiary, which incurred deeper losses of £73.8m and may lose another £50m this year. Mr David Jones, group chief executive, said there was no reason to expect Ofreg, the industry regulator, to impose an onerous review. "We are looking for a balanced review, one that leaves the company with a proper incentive to drive the business forward," he said. "We have brought controllable costs down by 40 per cent since 1990," he said. This is the best performance of any part of the regulated electricity sector. Mr Jones also held out the prospect of a turnaround in the fortunes of Energis, which should become cash positive by 1997-98. He said the break-even turnover was between £350m and £450m, depending on business mix. The Grid reported a 1 per cent rise in pre-tax profits to £261.5m in the year to March 31, on turnover up 4 per cent to £1.49bn. Excluding Pumped Storage, sold last year to Mission Energy of the US, operating profits were up 8.7 per cent to \$86.3m on turnover up 8.8 per cent to £1.42bn. Gearing of 114 per cent should come down to around 80 per cent during the year. The company declared a final dividend of 6.10p which makes 10.27p for the year - up 8 per cent. The shares closed down 2p at 181 1/2p, compared with the 209p at which they stood in December.

Table with columns: Company, Yr to Mar 31, Turnover (£m), Pre-tax profit (£m), EPS (p), Dividend (p), Date of payment, Dividends corresponding dividend, Total for year, Total for year. Lists various companies like Allied Colloids, Apollo Metals, Ascent, etc.

LEX COMMENT Camelot

The chances of a player accumulating £51m from the UK's National Lottery are one in several trillion, but the after-tax profits of lottery organiser Camelot owe little to luck. It has done a great job in setting up the system and marketing it. A non-profit making organisation would have had less incentive to increase revenues and therefore cash for the government. Moreover, the money paid out to good causes and to the government in tax is already the highest in the world, even as a percentage of sales. Without the profit motive, the organisers would inevitably give suppliers of electronic systems or marketing services more generous contracts; so private sector profits would just be conveniently hidden. Camelot made life difficult for itself by changing its accounting policy, with the result of increasing them last year. It has also resisted the temptation to shelter profits behind provisions. Nonetheless, its pre-tax profits were only a quarter of the commission it paid to retailers. And Camelot's 1 per cent after-tax profit margin will shrink, since the proportion going to good causes and prize money increases over the life of the franchise. Competitors, from betting shops to bingo halls, will hope that the future over corporate greed forces Camelot to take its eye off the ball. Scratch card sales are 60 per cent below their 1994 peak, and the UK's gaming industry is back on a recovery track. However, Camelot's plan for a mid-week national draw could increase revenues by about £160m a year - and that will come out of other businesses' pockets.

Progress on Eurotunnel talks

By Geoff Dyer Hopes of a prompt settlement to Eurotunnel's refinancing talks were raised yesterday by a statement from Mr Patrick Ponsolle, the Anglo-French group's co-chairman. Mr Ponsolle said that it was "not unrealistic" for an outline refinancing plan to be in place by the group's annual meeting on June 27. His upbeat comments were echoed by bankers involved in the negotiations. One said that the annual meeting was being viewed "as a window of opportunity" for achieving a settlement. Another said that it was "not out of the question" that an agreement might be reached before then. Both the banks and the company are expected to use the looming deadline to try and squeeze concessions out of the other side. Mr Ponsolle's comments prompted a further rise in Eurotunnel shares, which have nearly doubled since the beginning of April. Having risen 11 1/2p on Monday, they closed 10p up at 115 1/2p after the largest volume of trading in Paris

in any day since September. There was speculation in Paris that the refinancing terms would be less harsh for shareholders than had been feared. However, analysts said the rise in the share price was surprising as a refinancing would result in a dilution of existing shareholders. Any outline refinancing agreement would need the approval of both the group's shareholders and all its 225 banks. Eurotunnel has been in talks with its banks since September after it halted interest payments on £8.1bn of debt.

Instituto de Crédito Oficial USD 450,000,000 Statutory Guaranteed Floating Rate Notes due 1997. In accordance with the Terms and Conditions of the Notes, notice is hereby given that for the interest period from June 05, 1996 to December 05, 1996 the Notes will carry an Interest Rate of 5.775625% per annum.

To the Holders of Banco Central de Costa Rica US \$66,611,115 Series A Interest Claims Bonds Due May 21, 2005. NOTICE IS HEREBY GIVEN that the rate of interest from May 21, 1996 through and including August 20, 1996 is 6.326125% per annum.

Notice To the Holders of THE OUTSTANDING \$20,000,000 6.50% Convertible Bonds due December 31, 2009 (the "Bonds") of Saunung Heavy Industries Co., Ltd. (the "Company"). NOTICE IS HEREBY GIVEN to the holders of the Bonds that, pursuant to the provisions of the Indenture constituting the Bonds, the conversion price of the Bonds has been adjusted from Won 25,053 to Won 24,394 per share.

PUBLIC NOTICES LOWNDEN QUEENSWAY PLC DIRECTORS' PENSION SCHEME. Notice is given under section 77 of the Trustee Act 1925 that the Scheme is to be wound up in the next financial year.

Advance Bank Australia Limited US\$150,000,000 Floating Rate Notes 2006. The notes will bear interest at 6.2625% per annum for the interest period from 5 June 1996 to 5 September 1996. Interest payable twice 5 September 1996 will amount to US\$160.53 per US\$100,000 note.

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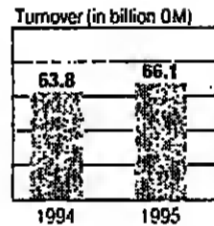


We've been
looking ahead from
the start.

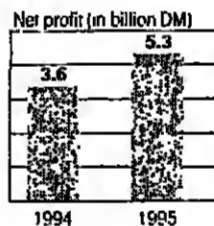
We have presented our first consolidated financial results. Since 1990, we have invested heavily in the network; created a new company structure as well as a focused marketing strategy.

Our financial results at a glance

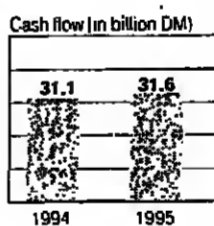
Increased turnover
Group turnover of Deutsche Telekom increased by 4% to DM 66.1 billion (US \$ 46.1 bn) compared to the previous year. Growth came mainly from telephone services and mobile telephony.



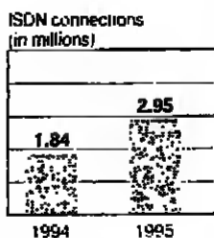
Net profit
The group's net profit increased last year by 50% from DM 3.6 billion to DM 5.3 billion (US \$ 2.5 bn to US \$ 3.7 bn).



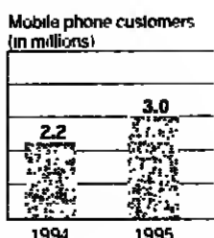
Strong cash flow
We increased our operative cash flow from DM 31.1 billion to DM 31.6 billion (US \$ 21.7 bn to US \$ 22.0 bn) compared to the previous year. All investments and the repayment of financial commitments were financed out of cash flow.



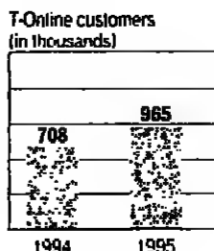
Telephone services
With 40 million connections, we have the third largest telephone network in the world. And one of the most modern. Thanks to the increasing digitalisation of our local network and, of course, ISDN where we have more connections than anyone else in the world. With a market orientated tariff structure and new improved services, we are laying the foundations from which to face domestic competition from 1996 onwards.



Mobile telephony
In mobile telephony, the number of our customers increased last year by around 40% to more than 3 million. It's because of new customer orientated services that we have one of the leading businesses in Europe.



T-Online
Around one million customers used our T-Online service last year. With approximately 20,000 new customers every month, we were able to make sure that T-Online significantly increased its lead as the biggest data service in Germany.
All figures: per exchange rate on 29-12-95.



Now, we are well placed to meet challenges as they arise. Despite increasing competition in the German telecommunications market, turnover and net profit have risen - results that point us in the right direction.

And not only in Germany. As we set our sights globally, we've celebrated some important business achievements. Global One, for example, our international joint venture with France Telecom and Sprint, is one such notable success. So, too, is our increasing expansion into Asia and Eastern Europe.

Innovation in the multimedia age.
Telecommunications is considered by many to be one of the most dynamic markets of the future, with an increasing number of businesses basing their success on technology. That's why we want to continue to build on our position as a leader in information super-highways, where our pioneering work has helped to transform the way we all live through the use of telemedicine, telelearning and teleworking.

Today, our multimedia services can offer everyone at home or in the office an exciting way into the fascinating world of information.

Why not discover the future for yourself? If you want more details on Deutsche Telekom's financial results, simply send us a fax on +49 9 21 18 10 29 for a copy of our annual report.

Our connections move the world.

T Deutsche Telekom

COMMODITIES AND AGRICULTURE

Funding boost raises Cuban sugar hopes

By Pascal Fletcher in Havana

Cuba has secured foreign financing for its 1996-97 sugar harvest in all 13 of the island's sugar-growing provinces and this is expected to lift its sugar production next season well above the 4.5m tonnes estimated for this year.

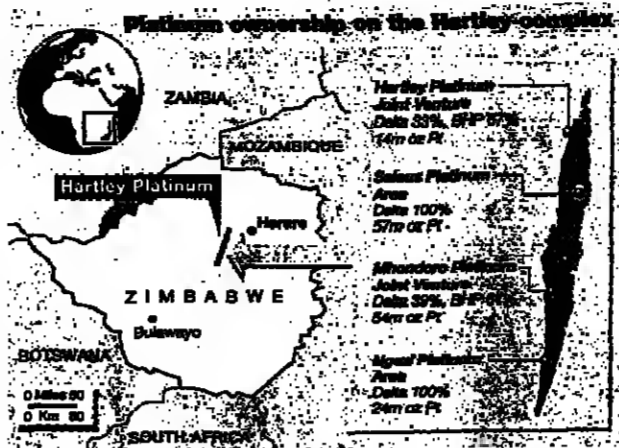
That cover had now been extended to all 13, Mr Betancourt said. The positive impact of the foreign capital injection into Cuba's recession-hit sugar sector was visible in this year's harvest, which Cuban leaders are confident will reach the official target of 4.5m tonnes, a significant jump up from last year's disastrously low 3.3m tonnes.

Cuba's sugar output over the next two or three harvests back to historical levels of at least 6m tonnes, and possibly higher, depending on economic and other factors. Mr Betancourt declined to give figures for the total foreign financing secured for 1996-97 but it was believed to be approaching \$200m.

Deal close on Zimbabwe platinum venture

By Kenneth Gooding, Mining Correspondent

A deal should be completed within six months to bring together the four platinum areas in Zimbabwe into a venture capable eventually of challenging the big South African platinum producers. Mr Peter Vanderspey, chairman of Delta Gold, an Australian company with an interest in all four areas on Zimbabwe's Great Dyke - a long, sinuous structure traversing the country - made this prediction yesterday.



156,000 ounces of platinum - about 3 per cent of global supply. Hartley is also scheduled to produce 110,000 ounces of palladium, 11,000 ounces of rhodium, 23,000 ounces of gold, 8,200 tonnes of nickel, 2,300 tonnes of copper, 35 tonnes of cobalt and 6,400 tonnes of sodium sulphate. Mr Vanderspey said the Hartley project was at least three months ahead of schedule. Ore was being mined and stockpiled. Initial nickel and copper production was expected in December and initial platinum group metals and gold output was expected in March.

accounting for 70 per cent of world platinum supply, have an average production cost of about \$320 an ounce," he pointed out. Analysts suggested Hartley's low costs should protect it if South African companies mounted an aggressive marketing campaign as they aimed to capture the market. Mr Vanderspey said that consumers, particularly the big car companies that use platinum metals in anti-pollution catalysis, welcomed another source of the metal outside South Africa and Russia. BHP owns 67 per cent and is operator of Hartley; Delta has the remaining 33 per cent.

Mr Vanderspey said negotiations between BHP and Delta for a merger of all four areas were very complex because discussions involved many other issues. Among these was whether Delta should repay BHP its 33 per cent share of the \$26m capital cost of Hartley. If Delta did not repay, it would receive only 9.9 per cent of project cash flow whereas, if it repaid its share plus interest, it would receive 33 per cent of the metals produced by Hartley. Financial modelling by Delta confirmed the desirability of repaying BHP, he added. He believed that, using a mixture of equity funding and project-associated debt, it should be possible for Delta to repay BHP without having to raise new capital. However, in two years time the partners would consider expanding Hartley and that might be the appropriate moment for Delta to go back to shareholders and possibly even to split its platinum and gold interests into separate organisations.

MARKET REPORT Copper weak

COPPER prices were unable to hold above the \$2,400-a-tonne level in after hours 'kerf' trading on the London Metal Exchange yesterday and slid back to register a weak start close, although the market remained above early lows of \$2,385.

Table with columns: Metal, Price, Change, High, Low, Vol. Includes Aluminum, Copper, Lead, Nickel, Zinc, Tin.

Financial controversy threatens plan to protect plant diversity

John Madeley reports on a UN Food and Agriculture strategy to halt 'large scale loss of plant genetic resources'

An international plan to help the conservation and sustainable use of plants has run into problems just weeks before it is to be discussed at a major UN Food and Agriculture Organisation conference in Leipzig (June 19-20). The FAO says around three-quarters of the world's plant species have been lost this century, and warns that the "large scale loss of plant genetic resources, vital for agriculture and food security, give reason for major concern". The warning is based on a survey of 154 countries.

Over 80 countries reported that the spread of modern, commercial agriculture and the introduction of new varieties of crops was the main cause of the loss of plant genetic resources. The new varieties have led to thousands of traditional varieties of crops being discarded. Other causes include over-grazing, legislation and policy, agricultural changes, pests, civil strife, and shifting cultivation.

The draft plan admits that most "attention, funds and scientific expertise" have so far focused on conservation of plant genetic resources in genebanks - refrigerated store rooms - and that the importance of on-farm conservation and better utilisation of plants to reduce hunger and poverty. A further aim is "to promote a better sharing of the benefits derived". Farmers that have contributed plants that are used by breeders to develop improved crops, could, for example, be entitled to benefit.

Plant genetic resources for food and agriculture provide the biological basis for world food security and support the livelihoods of every person on earth, says the FAO. Agricultural systems in all countries are "heavily dependent" on plants from other countries, it points out. A draft "Global Plan of Action" to tackle the problems has been drawn up by the FAO's Commission on Plant Genetic Resources. The plan aims to promote the conservation of plant genetic resources and "better utilisation of the resources in order to foster development and to reduce hunger and poverty".

The draft plan has also attracted criticism from over 20 non-governmental organisations from five continents. At a recent meeting in Rome, the NGOs took the view that while a Global Plan was sorely needed, the draft gave too much priority to conservation in genebanks, and that that would "increase reliance on formal research institutions... further marginalising farmers' roles in the on-farm conservation and development of plant genetic resources". In a joint statement, industrial organisations and NGOs said: "We believe that a strong and dynamic rolling, global, regional, national and community Plan of Action, based on values of true sustainability and driven by strong peasant participation is urgently needed". The Leipzig conference will test whether the 160 governments that are expected, share the urgency.

COMMODITIES PRICES

BASE METALS

Table with columns: Metal, Price, Change, High, Low, Vol. Includes Aluminum, Copper, Lead, Nickel, Zinc, Tin.

PRECIOUS METALS

Table with columns: Metal, Price, Change, High, Low, Vol. Includes Gold, Silver, Platinum, Palladium.

ENERGY

Table with columns: Commodity, Price, Change, High, Low, Vol. Includes Oil, Gas, Coal.

GRAINS AND OIL SEEDS

Table with columns: Commodity, Price, Change, High, Low, Vol. Includes Wheat, Corn, Soybeans.

SOFTS

Table with columns: Commodity, Price, Change, High, Low, Vol. Includes Coffee, Sugar, Cocoa.

MEAT AND LIVESTOCK

Table with columns: Commodity, Price, Change, High, Low, Vol. Includes Live Cattle, Pork, Hides.

Precious Metals continued

Table with columns: Metal, Price, Change, High, Low, Vol. Includes Gold, Silver, Platinum, Palladium.

GRAINS AND OIL SEEDS

Table with columns: Commodity, Price, Change, High, Low, Vol. Includes Wheat, Corn, Soybeans.

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ENERGY

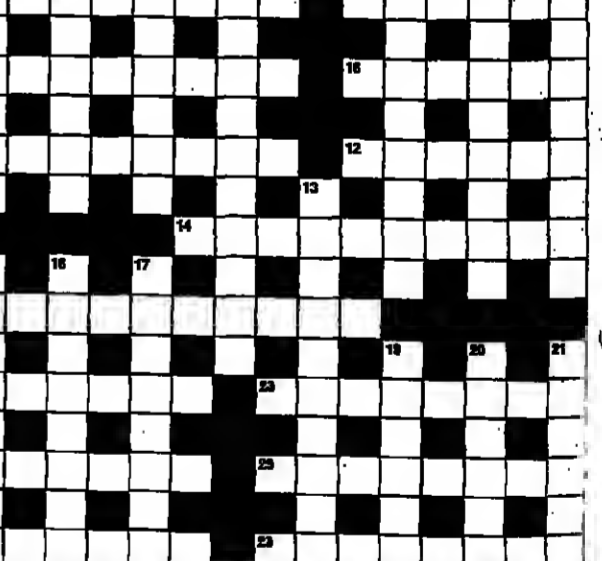
Table with columns: Commodity, Price, Change, High, Low, Vol. Includes Oil, Gas, Coal.

JOTTER PAD

Table for Jotter Pad with columns: Metal, Price, Change, High, Low, Vol. Includes Aluminum, Copper, Lead, Nickel, Zinc, Tin.

CROSSWORD

No.9.086 Set by BATS



- 1 Manage to avoid scuffing half of loaf (a messy idea) (8)
2 Breathe about Indian bread fruit (5)
3 Fight, then plunder traveller's bag (6)
4 Just advocates cathedral (8)
5 Light, then plunder traveller's bag (6)
6 What's cursed in Ghana: the Masali? (5)
7 Enough data to get Queen almost totally confused (8)
8 We hear nonsense about New York - it's no special place (5)
9 Prohibitory measure of Indian nation, laced (10)
10 A sign of reduction in fare to be carried out (4-4)
11 Harry holds pen plant (5)
12 Landlord wants insects seen off (5)
13 Disconcert the conductor (5)
14 Bird on either side of the field? (6)
15 Quality shaded plates black and blue (5)
16 Sign removed from flag - flag complete (8)
17 Indirectly relating to the whole (8)
18 You and I helpless about those most depressed (6)
19 Left to selectively kill, is on copper's tail (10)
20 Bird on either side of the field? (6)
21 Quality shaded plates black and blue (5)
22 Waves back we hear (6)
23 Six misspell (a nervous problem), a nervous problem (8)
24 Direction that is of the great - set latitude (8)
25 Drunk after strain becomes impenetrable (8)
26 Vociferated, seeing back line was in front (5)
27 Indirectly relating to the whole (8)
28 Down
29 Student gripped by something easy gets the grip (8)
30 You and I helpless about those most depressed (6)
31 Left to selectively kill, is on copper's tail (10)

Solution 9.085

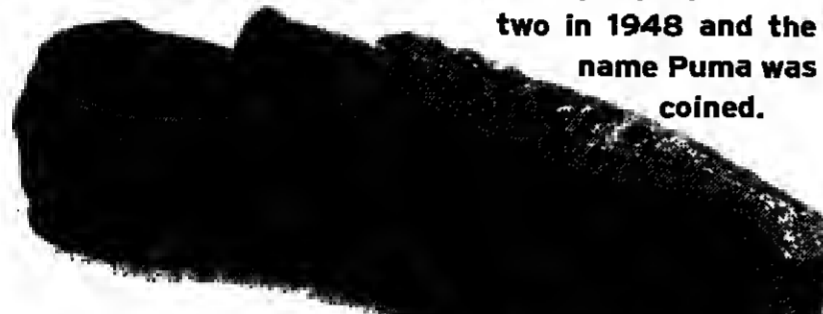
Table with columns: Clue, Answer. Includes: 1. Manage to avoid scuffing half of loaf (a messy idea) (8), 2. Breathe about Indian bread fruit (5), etc.

WE'RE PERFORMING BRILLIANTLY ON GRASS AND TARTAN.

AND JUST AS WELL ON PAPER.

The company that was to become Puma was born back in 1924.

It was launched by Rudolf Dassler and his brother into a sports market in its infancy. Known then as Dassler Schuhfabrik, the company split into two in 1948 and the name Puma was coined.



For years, there was little competition and the brand thrived, enjoying decades of market leadership. Business peaked in 1986, coinciding with a stock-market flotation. Although new products and new technologies were consistently introduced, a rude awakening was in store in the shape of highly aggressive competition from Reebok and primarily Nike. Puma was quickly outpaced by its younger and fitter competitors. Seven years in the wilderness lead to unsustainable losses. It became obvious that a programme of refocusing and restructuring was not only necessary but vital to the future of the company. Thus, phase one of the restructuring programme was introduced in 1993. It involved drastic cost reduction. The streamlining of the product range. The creation of profit centres. And the outsourcing of production. As well as a painful, but absolutely crucial, headcount reduction.

Phase two began in 1994. Basically, this was an internal re-engineering process. The entire company culture was modernised. Business processes were redesigned. Product costing was closely examined. And a streamlining of suppliers was undertaken.

Phase three followed in 1995. At its core was a renewed focus on product. A focus that accurately reflects the company's mission statement:

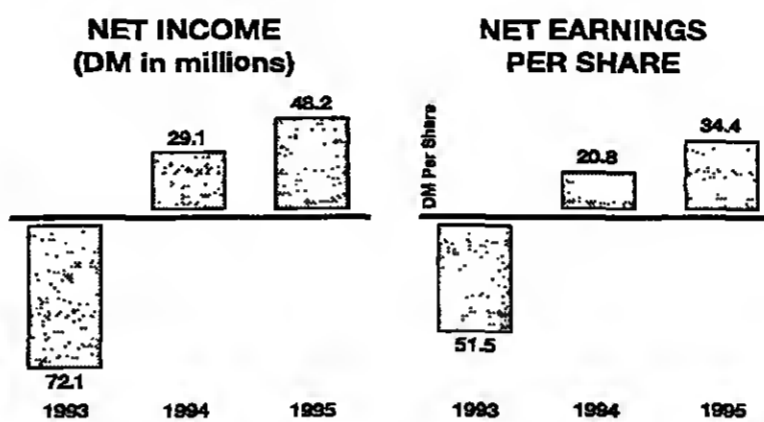
'to market excellent sports performance products that meet the needs and aspirations of today's consumers'

Allied to this was more stringent business management. A greater market and customer focus. A new product range. A global marketing strategy. Increased concentration on customer service. And tighter licensee control. These measures have led to a welcome return to both growth and profit.

The impact of the restructuring has been widespread. Loss-making profit centres were reorganised or, in extreme cases, closed during phase one. In 1995, every one of the nine remaining profit centres did indeed make a profit.

Sales in the Puma Group and Worldwide (including licensees) have increased to DM413.6 million and DM1,128.9 million respectively. Margins, too, have improved markedly. Gross profits have risen from 29.9% of net sales to 37.4%. Income from operations has jumped from -11% to +14.5% of group net sales. While net income has leapt from -17.6% in 1993 to +11.7% in 1995. Not surprisingly, the impact on earnings per share has been

enormous with an increase of 65.4% over the period '94-'95 alone.

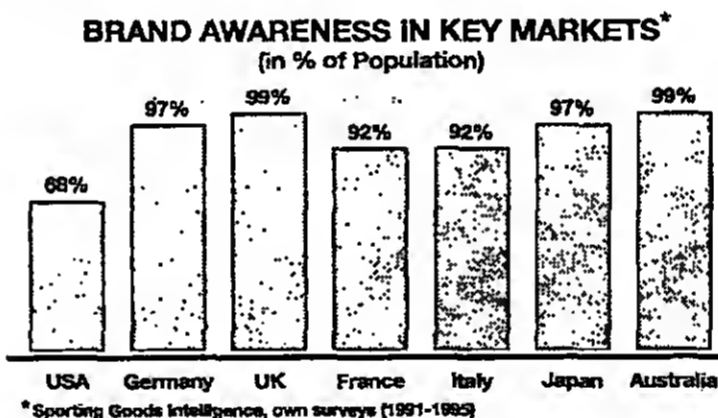


And so today the company finds itself, like its top endorsed stars, in good shape.

But what of the future? Well, the opportunity facing the company cannot be overstated.

The global sports market is simply vast. The sports footwear market alone now stands at approximately \$15bn per annum. Astonishingly, Puma's share of the worldwide market stands at just 4%.

The opportunity for growth for a sports company with the tradition and rich international heritage of Puma is there for all to see.



For, while market share in the US is minimal, brand awareness is surprisingly high. No less than 68% of the population profess recognition of the Puma brand. An impressive figure but noticeably less than the 90% brand recognition that Puma enjoys in many international markets. The widely contrasting figures attributed to market share and brand can only be seen as an opportunity for growth and must not be missed.

So just how can the company exploit this opportunity? What, in essence, are the tools for success?

Historically, Puma has been at the forefront of new technologies. Witness the introduction of the sole and shaft vulcanisation technology in the late '50s. The development of Velcro fastening in the '60s and the 'Trinomic' sports shoe mid-sole technology and Puma Disc system in the '80s and '90s.

Only by constantly pushing for technological leadership can Puma continually fulfil its mission statement. Hence the arrival of the latest technology. Puma Cell.

A lighter, more durable, performance based technology.

Other leading manufacturers are also working on new technologies.

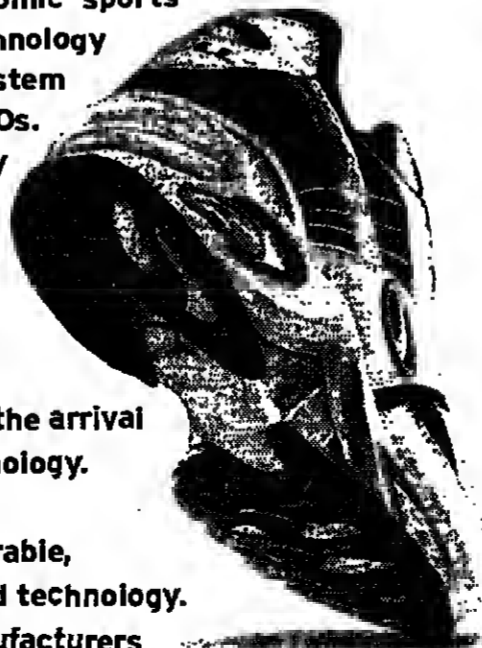
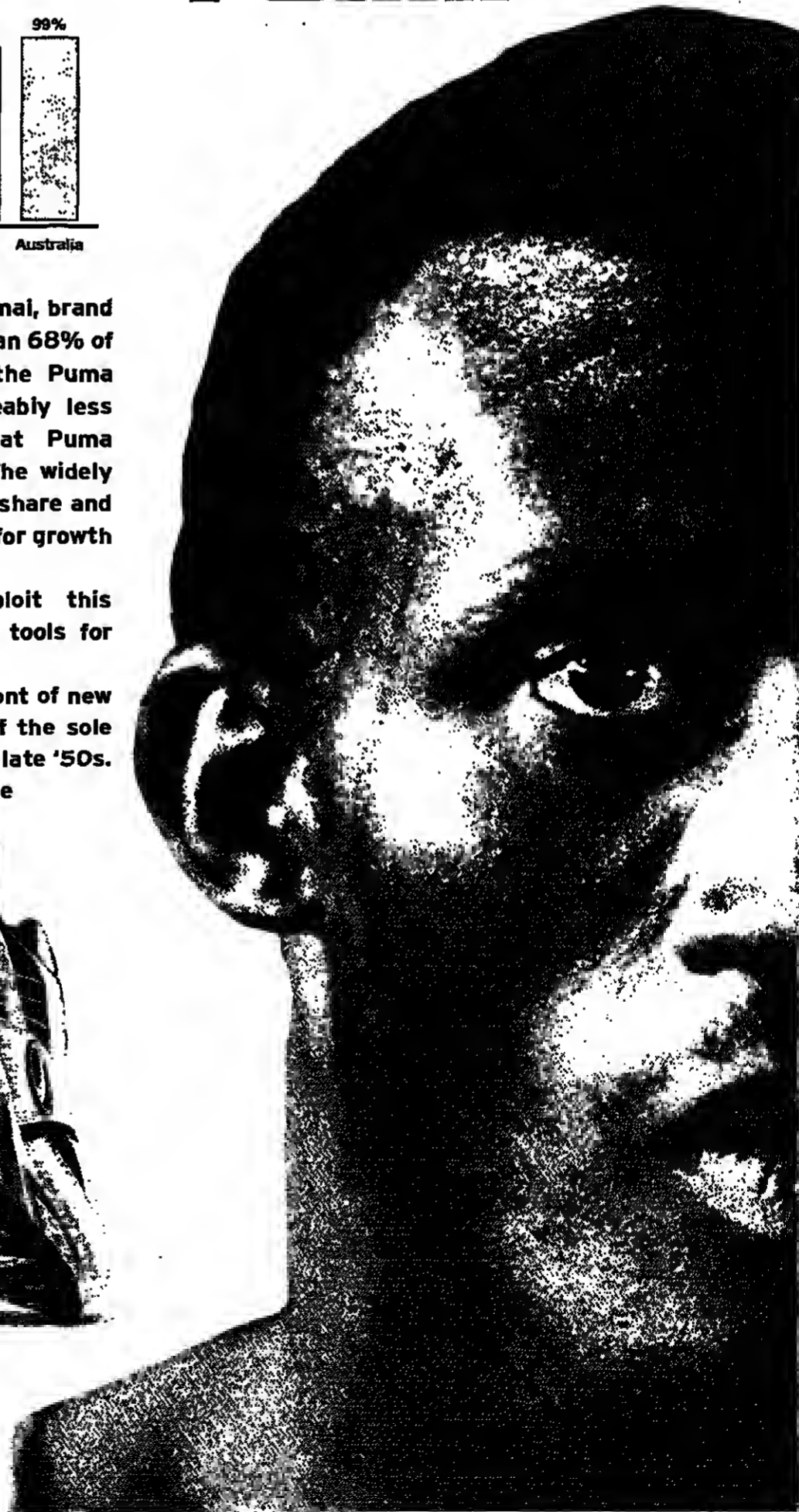
But, according to the Wall Street Journal,

no less, Puma have once again got there first.

*By JOSEPH PEREIRA
Staff Reporter of THE WALL STREET JOURNAL
Puma AG has begun shipping a foam-less athletic shoe, beating to market a host of bigger rivals with a technology on which the footwear industry plans its next generation of sneakers.*

Of course, on the pitch, our endorsed stars continue to shine. Diego Maradona and Lothar Matthaus have both lifted the World Cup. And they both wear Puma boots. On the track Jonathan Edwards, Linford Christie, Heike Drechsler, Merlene Ottey and Colin Jackson all wear Puma. Between them they have won 39 Olympic and World Championship medals. No fewer than nine of which were gold. And we all know that gold is good for the bank balance. Very good, indeed.

PUMA



INTERNATIONAL CAPITAL MARKETS

Treasuries shrug off manufacturers' orders data

By Lisa Branten in New York and Sander Iskander in London

A stronger dollar and an easing of fears that the Federal Reserve might raise interest rates next month helped US Treasury prices rise modestly, despite stronger than expected figures on manufacturers orders.

several Fed officials suggesting they were not alarmed by the pace of economic growth. Bonds also benefited from the dollar jumping to a 28-month high against the yen and also rising against the D-Mark.

Most European bond markets were supported by the rallying US market. Italian BTPTs were once again the strongest performers. Life's September STP future settled at 115.66, up 0.71.

German bonds ended higher, tracking the US market. Life's September bond future settled at 95.71, up 0.22 and the 10-year benchmark bond closed at 98.37, up 0.32.

UK gilts were supported by a firm currency and rallying Treasuries. Life's September long gilt future settled at 105.91, up 0.14.

The benchmark 7% per cent gilt due 2005 closed at 96.41, up 0.14. Its yield spread over 10-year bonds narrowed by 3 basis points to 167.

Signs of pricing swinging back in favour of banks

By Antonia Sharpe

The bottom of the pricing cycle in the syndicated loans market has been predicted many times in the past 12 months, but that moment may finally have come.

closely monitored is the \$500m loan for the about-to-be-privatised British Energy, because many banks avoid leading to the nuclear energy industry.

SYNDICATED LOANS

They are committing smaller amounts to loan facilities than six or 12 months ago and are looking more rigorously at documentation. One experienced syndicator commented yesterday that "pricing has gone back in favour of the banks".

One is the DBL50m seven-year facility for Manassassa, the German engineering and telecommunications group, which carries a margin of 1.5% basis points over Libor.

Pemex highlights compression of emerging market spreads

By Conner Middelmann

The surge in emerging-market issuance continued yesterday, with \$500m of two-year bonds for Pemex highlighting the compression of spreads for borrowers in emerging markets.

its June 1995 launch level of 185 basis points. The D-Mark issue is expected in late June via GS First Boston and Deutsche Morgan Grenfell.

basis points over bonds, was considered by some to be tight. However, Deutsche Morgan Grenfell reported good sales in Asia, including lead orders from joint book-runner Daiwa.

Libanais plans to launch a three-year eurobond via Merrill Lynch, while Pakistan is to issue \$150m of 4 1/2-year floating-rate notes via Citibank.

back of three US dollar yen issues and two sterling bonds was getting a good response. It said about 40 per cent of the \$197.5m sterling issue had been repurchased and also reported good results on the \$500m of

yen issues. The bonds are being repurchased at spreads of between 10-35 basis points over corresponding UK gilts or US Treasuries. New Zealand is expected to have zero net foreign currency debt by 1997.

NEW INTERNATIONAL BOND ISSUES

Table with columns: Borrower, Amount, Coupon, Price, Maturity, Face, Spread, Book-runner. Lists various international bond issues from borrowers like US EXIMBANK, Compagnie Bancaire, etc.

WORLD BOND PRICES

BENCHMARK GOVERNMENT BONDS

Table with columns: Country, Coupon, Price, Yield, etc. Lists benchmark government bonds for Australia, Austria, Belgium, Canada, etc.

EURO BOND FUTURES OPTIONS (LIFE) DMS20,000 points of 100%

Table with columns: Strike, Price, Call/Put, etc. Lists Euro bond futures options for various maturities.

ITALY

Table with columns: Open, Settle, Change, High, Low, etc. Lists Italian government bond futures prices.

FT-ACTUARIES FIXED INTEREST INDICES

Table with columns: Price Index, Jun 4, Jun 3, etc. Lists fixed interest indices for various categories like 1 Up to 5 years, 2 5-15 years, etc.

FT FIXED INTEREST INDICES

Table with columns: Govt. Sec. (UK), Fixed Interest, etc. Lists fixed interest indices for UK government securities and fixed interest.

FT/ISMA INTERNATIONAL BOND SERVICE

Table with columns: Issued, Bid, Offer, etc. Lists international bond service data for various countries and maturities.

US INTEREST RATES

Table with columns: Instrument, Rate, etc. Lists US interest rates for various instruments like Treasury bills, notes, etc.

UK

Table with columns: Instrument, Rate, etc. Lists UK interest rates for various instruments like Treasury bills, notes, etc.

FRANCE

Table with columns: Instrument, Rate, etc. Lists French interest rates for various instruments like Treasury bills, notes, etc.

US TREASURY BOND FUTURES (CBT) \$100,000 bonds of 100%

Table with columns: Open, Settle, Change, High, Low, etc. Lists US Treasury bond futures prices.

Japan

Table with columns: Instrument, Rate, etc. Lists Japanese interest rates for various instruments like Treasury bills, notes, etc.

UK GILTS PRICES

Table with columns: Instrument, Price, Yield, etc. Lists UK gilt prices for various maturities.

BOND FUTURES AND OPTIONS

FRANCE

Table with columns: Instrument, Price, Yield, etc. Lists French bond futures and options prices.

US

Table with columns: Instrument, Price, Yield, etc. Lists US bond futures and options prices.

Germany

Table with columns: Instrument, Price, Yield, etc. Lists German bond futures and options prices.

Other Fixed Interest

Table with columns: Instrument, Price, Yield, etc. Lists other fixed interest instruments and their prices.

DEUTSCHE MARK STRAIGHTS

Table with columns: Instrument, Price, Yield, etc. Lists Deutsche Mark straight bond prices.

SWEDEN

Table with columns: Instrument, Price, Yield, etc. Lists Swedish bond prices.

Other Fixed Interest

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CURRENCIES AND MONEY

MARKETS REPORT

Dollar reaches 28 month high against yen

By Philip Gawth

Renewed concern about the stability of the Japanese financial system yesterday helped the dollar rally to a 28 month high against the Japanese yen.

The collapse of a Japanese mortgage lender, the eight such institution to collapse in 18 months, dampened recent speculation of a possible tightening of monetary policy, which had lent some strength to the yen.

Speculation that the Tankan survey of business conditions, due for release later this week, would be weak also bolstered this view that monetary policy is likely to stay on hold.

The dollar finished in London at 1109.025, up from 1108.285. Against the D-Mark it finished at DM1.5311, up from DM1.5265.

The yen was weaker against the D-Mark, finishing at 177.15, from 177.87.

In Europe the focus was on Spain, where the central bank caught the market off guard by

cutting the key money rate to 7.25 per cent from 7.5 per cent. Less surprising was the decision by the Swedish Riksbank to cut the repo rate to 6.3 per cent, from 6.5 per cent, the twelfth cut this year.

Swedish maintained its firm showing of recent days, with the trade weighted index closing at 85.5 from 85.3. It was little changed against the dollar at \$1.5498, from \$1.5488, but gained nearly a pfennig against the D-Mark to finish at DM2.3741, from DM2.385.

The trade weighted index is still around 15 per cent below sterling's nominal exit level from the ERM in September 1992 and about nine per cent below in real terms.

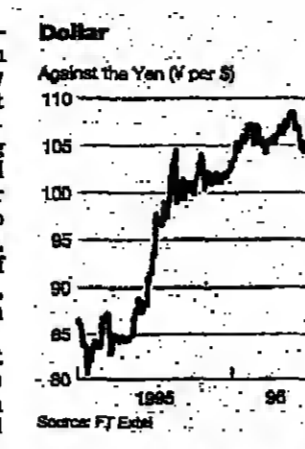
The dollar's recent performance

Table showing dollar's performance against various currencies: Euro, Pound, Swiss Franc, etc.

mance has been more impressive against the yen than against the D-Mark. Mr Jeremy Hawkins, chief economist at the Bank of America in London, said: "There is a growing suspicion that most of the bad news is out of the way now for Germany." The dollar has also been helped by yen weakness, which is the product of rumours, emanating in Japan, suggesting that the Tankan survey will be weak.

"The market's view is that it will be sufficiently soft that no rate hike will be necessary in the foreseeable future," said Mr Hawkins.

Even if the dollar's rally has been less than dramatic in recent weeks and months, it has come a long way: about 35 per cent against the yen and 14 per cent against the D-Mark from last year's lows.



Source: FT Estimate

■ The Spanish rate cut was ahead of expectations and was taken by the market as clear evidence that the Bank of Spain is actively trying to weaken the peseta, something senior officials have recently been trying to achieve through verbal intervention.

Support for this view lies in the fact that the central bank has chosen to cut rates before the release of the May inflation figures, despite disappointing data in April.

Perhaps of more consequence in Europe were developments in Scandinavia where the Finnish markka and Swedish krona both relied on renewed talk about early entry into the ERM. The catalyst for this was legislative initiative in Finland to allow such a move to take place. "People are clearly speculating on the possibility of an early move into the ERM on the part of both currencies."

This had a knock on effect to the Italian lira, despite some

disappointing data recently about government borrowing. The lira finished at L1,008 from L1,011, while the krona closed at SKr4.372, from SKr4.387.

Mr Eric Asbrink, Sweden's new finance minister, denied speculation that Sweden, Italy and Finland were planning to hold talks later this month aimed at planning a combined entry into the ERM.

Mr Robin Aspinall, market strategist at National Australia Bank in London said such a "co-ordinated act of Maastricht masochism" was only possible because the dollar's rally had taken pressure off on-core currencies. "But the dollar is now peaking... which means that this threatens to be a classic example of mis-timing."

■ OTHER CURRENCIES: Table showing other currencies like the Swiss Franc, Australian Dollar, etc.

POUND SPOT FORWARD AGAINST THE POUND

Table showing Pound Spot Forward Against the Pound with columns for currency, closing mid-point, change on previous day, bid/offer spread, etc.

DOLLAR SPOT FORWARD AGAINST THE DOLLAR

Table showing Dollar Spot Forward Against the Dollar with columns for currency, closing mid-point, change on previous day, bid/offer spread, etc.

CROSS RATES AND DERIVATIVES

Table showing Exchange Cross Rates for various currencies like Euro, Swiss Franc, etc.

UK INTEREST RATES

Table showing UK Interest Rates for London Money Rates and UK Treasury Bill Futures.

EURO CURRENCY INTEREST RATES

Table showing Euro Currency Interest Rates for various currencies like Euro, Swiss Franc, etc.

BASE LENDING RATES

Table showing Base Lending Rates for various banks and financial institutions.

ENGLISH EUROPEAN CURRENCY UNIT RATES

Table showing English European Currency Unit Rates for various currencies.

THREE MONTH EURO DOLLAR FUTURES

Table showing Three Month Euro Dollar Futures for various currencies.

THREE MONTH STERLING FUTURES

Table showing Three Month Sterling Futures for various currencies.

THREE MONTH EURO DOLLAR FUTURES

Table showing Three Month Euro Dollar Futures for various currencies.

THREE MONTH EURO DOLLAR FUTURES

Table showing Three Month Euro Dollar Futures for various currencies.

WORLD INTEREST RATES

Table showing World Interest Rates for various countries and currencies.

EURO CURRENCY INTEREST RATES

Table showing Euro Currency Interest Rates for various currencies.

THREE MONTH EURO DOLLAR FUTURES

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pricing... back in... of banks

BERKELEY FUTURES LIMITED advertisement

FUTURES AND OPTIONS TRADING advertisement

MARGINED FOREIGN EXCHANGE TRADING advertisement

PHILLIP ALDEN advertisement

KNIGHT-RIDDER'S FUTURES MARKET DATABOOK advertisement

SPREAD BETTING ON OVER EIGHTY MARKETS advertisement

Margined FOREX advertisement

OFFSHORE COMPANIES advertisement

Petroleum Argus Daily Oil Price Reports advertisement

Market-Eye advertisement

Futures Traders: Save on Every Trade advertisement

THE THAILAND INTERNATIONAL FUND LIMITED advertisement

Les Echos advertisement

FAST 64 BIT SATELLITE TECHNOLOGY advertisement

SHARE SENTRY advertisement

FT GUIDE TO WORLD CURRENCIES advertisement

LONDON SHARE SERVICE

INV TRUSTS SPLIT CAPITAL - Cont.

Table listing investment trusts with columns for Name, Price, and % Change.

OTHER INVESTMENT TRUSTS

Table listing other investment trusts with columns for Name, Price, and % Change.

INVESTMENT COMPANIES

Table listing investment companies with columns for Name, Price, and % Change.

LEISURE & HOTELS

Table listing leisure and hotel companies with columns for Name, Price, and % Change.

LEISURE & HOTELS - Cont.

Table listing leisure and hotel companies (continued) with columns for Name, Price, and % Change.

LIFE ASSURANCE

Table listing life assurance companies with columns for Name, Price, and % Change.

MEDIA

Table listing media companies with columns for Name, Price, and % Change.

OIL EXPLORATION & PRODUCTION

Table listing oil exploration and production companies with columns for Name, Price, and % Change.

OIL, INTEGRATED

Table listing integrated oil companies with columns for Name, Price, and % Change.

OTHER FINANCIAL

Table listing other financial companies with columns for Name, Price, and % Change.

PHARMACEUTICALS - Cont.

Table listing pharmaceutical companies (continued) with columns for Name, Price, and % Change.

PROPERTY

Table listing property companies with columns for Name, Price, and % Change.

RETAILERS, GENERAL - Cont.

Table listing general retailers (continued) with columns for Name, Price, and % Change.

SUPPORT SERVICES

Table listing support services companies with columns for Name, Price, and % Change.

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OTHER FINANCIAL - Cont.

Table listing other financial companies (continued) with columns for Name, Price, and % Change.

PAPER, PACKAGING & PRINTING

Table listing paper, packaging, and printing companies with columns for Name, Price, and % Change.

PHARMACEUTICALS

Table listing pharmaceutical companies with columns for Name, Price, and % Change.

PROPERTY - Cont.

Table listing property companies (continued) with columns for Name, Price, and % Change.

RETAILERS, FOOD

Table listing food retailers with columns for Name, Price, and % Change.

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Table listing general retailers with columns for Name, Price, and % Change.

RETAILERS, GENERAL - Cont.

Table listing general retailers (continued) with columns for Name, Price, and % Change.

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Table listing support services companies (continued) with columns for Name, Price, and % Change.

TELECOMMUNICATIONS

Table listing telecommunications companies with columns for Name, Price, and % Change.

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GUIDE TO LONDON SHARE SERVICE

Prices for the London Share Service delivered by FT Edit, a member of the Financial Times Group. Company classifications are based on post code for the FT-SE Accounts Share Index. Dividend and dividend cover are published for each stock. Dividend cover is calculated as the ratio of dividend to earnings per share. Dividend cover is calculated on a trailing 12-month basis. Dividend cover is calculated on a trailing 12-month basis. Dividend cover is calculated on a trailing 12-month basis.

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FT Company Focus

Comprehensive 10-14 page report available on this company, containing key FT stories from the last year, latest survey of City profit forecasts and investment recommendations, 5 year financial and share price performance review, balance sheet and profit and loss data, plus recent Stock Exchange announcements for 2004.

Up-to-the-second share prices

Up-to-the-second share prices are available by telephone from the FT Cityline service. See Monday's share price pages for details.

International service

An international service is available for callers outside the UK, annual subscription £250 net. Call 0171 573 4378 for more information on FT Cityline.

FT MANAGED FUNDS SERVICE

FT Cityline Unit Trust Prices are available over the telephone. Call the FT Cityline Help Desk on (+44 171) 873 4878 for more details.

Table of fund prices including columns for Fund Name, Price, and Change. Includes sections for Global Investment Funds, Foreign & Domestic Emerging Markets, and Offshore Insurances.

Table of fund prices for RICA Asia Pacific Umbrella Fund, including various sub-funds like Nikko Bank (Singapore) and Pacific Basin Growth Fund.

Table of fund prices for CMI Insurance Co Ltd, listing various insurance-related fund units.

Table of fund prices for Royal Standard Life Assurance Ltd, detailing different life assurance fund options.

Table of fund prices for Chocor Asset Investment Company Ltd, covering a range of asset management funds.

Table of fund prices for Global Asset Management - Contd., continuing the list of global asset management funds.

Table of fund prices for Magnet Funds, including various investment and growth funds.

Table of fund prices for Regent Knight Capital Management Ltd, listing capital management and investment funds.

OTHER OFFSHORE FUNDS

Table of fund prices for other offshore funds, including various international and regional investment vehicles.

OFFSHORE INSURANCES

Table of fund prices for offshore insurance products, such as life and health insurance funds.

MANAGED FUNDS NOTES: A detailed section providing important information, disclaimers, and terms of service for the managed funds service.

LONDON STOCK EXCHANGE

MARKET REPORT

Bid hints help stocks close at session highs

By Steve Thompson, UK Stock Market Editor

A much more bullish mood was evident in London's stock market at the close yesterday. Dealers spoke of the potential for imminent corporate activity, possibly involving a counter-move on Lucas Industries by BBA, but there were plenty of other rumoured bid candidates, especially in the composite insurance sector.

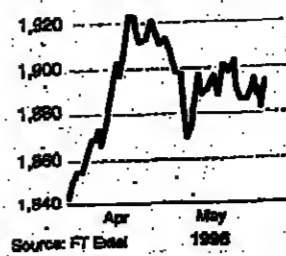
of £800m by selling its controlling stake in its bottling plant joint venture with Coca Cola. The prospect of another burst of takeover activity, plus a much needed rally on Wall Street, helped the FT-SE 100 index recover from a mid-morning bout of uncertainty and close the session in good heart. The index was finally a net 16 points higher at 3,755.2. There was no such enthusiasm for the second-liners, however. The FT-SE Mid 250 index, burdened by a handful of profits warnings, retreated 13 points to 4,492.5. The warnings came from a wide range of areas, including specialist chemicals companies such as Inspec, and banknote printer De

La Rue. Midland Independent Newspapers was another company forecasting lower than expected profits. Helping to drive the market forward was a big two-way trading programme, weighted on the buy side and executed by Merrill Lynch during the early afternoon. Earlier, the market had faltered after a relatively good start. Wall Street's Monday night slide, which saw the Dow Jones Industrial Average slip another 18 points, and the yield on the long bond to the 7 per cent mark, caused no real problems. The Footsie rose by more than 8 points shortly after the opening, but quickly ran out of steam as the big institutions showed reluctance

to push money into the market. Gilt prices crept higher at the outset and posted gains of around 6 ticks, before slipping back to level around lunchtime. The afternoon brought a strong turnaround for the market, however. The Merrill trading programme and the strong opening performance by Wall Street provided a shot in the arm for equities, which were additionally helped along by a firm US bond market. Shortly after Wall Street opened, the Dow was up some 20 points, and showed a gain in excess of 40 points an hour after London closed. A senior marketmaker at one of the big European securities houses

said the London market felt 'explosive' just before the close of trading, with the market being carried along by big gains in many of the banks and insurances and on the prospects for big funds. "A lot of the big funds have been underweighting London over the past few sessions on the view that Wall Street is about to take a bath; but the reality is that the US has already had its correction and is due a rally," the marketmaker said. Turnover in equities by the 5pm reading had reached 842.9m shares, with non-FT-SE 100 stocks comprising 64 per cent of the total. Customer business on Monday was valued at £1.26bn.

FT-SE-A All-Share Index



Index and ratios table showing FT-SE 100, FT-SE Mid 250, FT-SE-A All-Share, and FT-SE-A All-Share Yield with their respective values and changes.

Equity shares traded

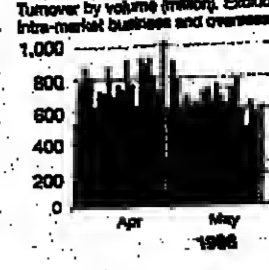


Table showing turnover by volume (million), including intra-market business and overseas turnover.

Lucas deal talk hits BBA

Engineer BBA moved sharply lower as talk about a possible spoiling bid for Lucas Industries ran rampant in the market. Most analysts took the story with a healthy dose of skepticism. With a stock market capitalisation of £1.3bn, BBA is valued at £800m less than Lucas, which recently announced plans to merge with Varty, of the US. "The group could possibly run to a deal of up to £500m with the aid of a rights issue, but an offer for Lucas makes neither financial or strategic sense," said one leading engineering analyst. Yet BBA does have a stated ambition to grow by acquisition. "It could well be up to something. The last big deal from BBA coincided with an analysts' trip to Switzerland. The company plans an analysts' visit to Sweden later this month," commented a trader.

month, drove the shares sharply ahead. They jumped 17 to 68p, making Cadbury the best performer in the Footsie. Turnover of 18m made it the day's second most active trade. Part of the move was attributed to the sale, though the session also saw the return of bid speculation to the stock. Several analysts were pleased by the move and said that the deal made sense in both the UK and US context for Cadbury.

However, Ms Sally Jones at Credit Lyonnais Laing was lukewarm on the deal and remains cautious on the stock. She said: "I thought this business was worth more, and all the other question marks, such as its relationship with Coca-Cola, remain." Coca-Cola remains a bottle to some of Cadbury's leading brands in the US. United Biscuits, long rumoured as a possible target for Cadbury, rose 3 to 22p. However, one analyst said this was a knee-jerk reaction. He said Cadbury had made it clear that further acquisitions would be in the confectionery and beverages businesses.

Johnston Press, which made a £11m rights issue to help pay for the deal and closed 4 higher at 210p. Eurotunnel continued to race higher in heavy turnover, topping the FT-SE Mid 250 performance charts for the second day running, in spite of what was seen in London as a slightly negative statement from the Channel tunnel operator.

The group reiterated that the end of June remains a target date for a debt restructuring deal. But that shareholders "must not underestimate the uncertainties which continue and will continue to affect the timetable or the substance of our negotiations." The shares, which stood at 80p at the beginning of May, surged to another new 1996 high, rising 10 to 135p. The Paris bourse was again the main centre of activity, with nearly 15.5m shares traded, the

heaviest single-day volume since September. Public houses group Regent Inns was in demand and the shares forged ahead 30 to 115p. Reports suggested an agency cross at 114p. The announcement that Swissair is prepared to make a £145m additional bid for Alders' duty free operations, subject to support from 40 per cent of Alders shareholders, caused a fall in the stock market, but analysts expected the Alders share price to rise today on the news. Alders was unchanged at 189p.

Moss Bros rose 142 to 128p as one or two marketmakers were caught short of stock. JJB Sports jumped 43 to 86p, with continuing interest on the forthcoming Euro-96 tournament which has kept the shares in demand for a few months. One analyst, who bought a shirt himself yesterday, said they were "flying out of the shop". General Accident improved 10 to 67p as the latest in its series of presentations to analysts continued to impress.

Vodafone, a weak market on Monday on the back of a possible OfTel probe into mobile phone prices, rebounded as profits came in marginally ahead of forecasts. The group is holding margins in a competitive UK trading environment and the overseas operations continue to make rapid progress. The stock added 4 1/2 to 254p in above average turnover of 20m, the day's heaviest Footsie volume. HSBC rallied 5 to 97p after Salomon Brothers upgraded current year forecasts for the group to £4.2bn from £4.1bn - which was already top of the range of analysts' forecasts.

Barclays rose 16 to 77p, with dealers' support after a presentation at SBC Warburg. Yorkshire Water bounced 5 to 73p ahead of figures due today, in spite of Monday's harsh comments from the regulator, hopes remain that the company might announce a share buyback. Thames Water slipped 1 1/2 to 57p in spite of confirming its intention to buy back 10 per cent of its shares. Full-year figures were in line with analysts' forecasts, but the shares have risen strongly in response to the sector's recent takeover activity.

FUTURES AND OPTIONS

Table showing FT-SE 100 INDEX FUTURES (LIFTS) and FT-SE 100 INDEX OPTION (LIFTS) with columns for Open, Settle, Change, High, Low, and Volume.

TRADING VOLUME

Table showing Major Stocks Yesterday with columns for Stock Name, Vol., and Change.

Profit warnings

London's lower tier indices were hit by a wave of profits warnings - particularly in the printing and publishing sector. Most damaging in terms of capitalisation was an announcement from De La Rue, the banknote printer. The company reported a flat profit of £147.5m for the year to March and warned that low banknote prices and difficult trading in the cash systems division were continuing. It

FINANCIAL TIMES EQUITY INDICES

Table showing Financial Times Equity Indices with columns for Index Name, Jun 4, Jun 3, May 31, May 30, May 29, Yr ago, High, Low.

London market data

Table showing London Market Data with columns for News and Info, Total Issues, Total Value, and Liffe Equity Options.

FT GOLD MINES INDEX

Table showing FT Gold Mines Index with columns for Index Name, Jun 4, Jun 3, May 31, May 30, May 29, Yr ago, High, Low.

FT-SE Actuaries Share Indices

Table showing FT-SE Actuaries Share Indices with columns for Index Name, Jun 4, Jun 3, May 31, May 30, May 29, Yr ago, High, Low.

The UK Series

Table showing The UK Series with columns for Index Name, Jun 4, Jun 3, May 31, May 30, May 29, Yr ago, High, Low.

Italian Lire 100,000,000,000. CREDIP S.p.A. Floating Rate Notes Due 2001. In accordance with the provisions of the Notes, notices is hereby given that for the Interest Period from May 31, 1996 to November 28, 1996 the Notes will carry an Interest Rate of 6.45% per annum.

SBA SOCIETE GENERALE ACCEPTANCE N.V. PRF 500,000,000 REVERSE FLOATING RATE NOTES DUE DECEMBER 2003. For the period June 03, 1996 to September 02, 1996 the new rate has been fixed at 8.09375% p.a.

LEGAL NOTICES. THE PORT AUTHORITY OF NY & NJ AIRPORT ACCESS PROGRAM. Request For Qualifications (RFQ) and Industry Review of Procurement Documents for Jamaica-JFK LRT System.

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FT-SE Actuaries Share Indices. The UK Series. Hourly movements. FT-SE Actuaries 350 Industry baskets. Additional information on the FT-SE Actuaries Share Indices is published in Saturday Issues.

WORLD STOCK MARKETS

Table of world stock markets including Europe (Austria, Germany, France, Italy, UK, etc.), Asia (Japan, Korea, Taiwan, etc.), and other regions. Columns include stock names, prices, and changes.

Advertisement for Peregrine Global Distribution. Text: 'Peregrine has the world's largest team dedicated to the international distribution of Asian securities.' Includes logo and contact information.

Table of stock market indices and futures, including S&P 500, Nikkei, and various regional indices. Columns show current values and changes.

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4 pm close June 4

NEW YORK STOCK EXCHANGE PRICES

Main table of stock prices with columns for stock symbols, prices, and changes. Includes sections for 'NEW YORK STOCK EXCHANGE PRICES', 'NASDAQ LISTED STOCKS', and 'NASDAQ LISTED STOCKS'.

MARKET REEF Bid By Steve Thom UK Stock Mark A much more evident in Lon the close rest of the potentia rate activity, counter-move by BBA, but other rumo especially in the auto sector. General Ac being touted gets and the buzz, albeit rounding Un bury Schwag

Lucidea hits Engineer f spooling a r turbo in rain Most anal with a isation of ned at 89 which r plans to the US. sibly run \$500m vi issue, bu makes 1 strategic engin Yet Bf ambition tur. "It someth from BL analyst. The colyts v month. BBA formed marke month Lucias lookin

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14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Advertisement for Hewlett-Packard featuring the text 'If the business decisions are yours, the computer system should be ours.' and the HP logo.

Continued on next page

NYSE PRICES

Table of NYSE stock prices including columns for stock name, price, change, and volume. Includes sub-sections for 'Continued from previous page' and 'AMERICAL PRICES'.

Table of NYSE stock prices (continued) with columns for stock name, price, change, and volume. Includes sub-sections for 'AMERICAL PRICES' and 'AMERICAL PRICES'.

NASDAQ NATIONAL MARKET

Table of NASDAQ National Market stock prices including columns for stock name, price, change, and volume. Includes sub-sections for 'AMERICAL PRICES' and 'AMERICAL PRICES'.

Table of AMEX stock prices including columns for stock name, price, change, and volume. Includes sub-sections for 'AMERICAL PRICES' and 'AMERICAL PRICES'.

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Table of AMEX stock prices (continued) with columns for stock name, price, change, and volume. Includes sub-sections for 'AMERICAL PRICES' and 'AMERICAL PRICES'.

AMERICA
Dow picks up after gains in \$ and bonds

Wall Street
US share prices were stronger at mid-session yesterday as the yield on the benchmark 30-year bond fell comfortably below 7 per cent and investors tried to set positions ahead of Friday's release of May payroll figures...



Coca-Cola Enterprises
Shares in Coca-Cola Enterprises rose 1/4% or 5 per cent to \$33% on news that the company, which is 49 per cent owned by Coca-Cola, would buy the UK bottler of Cadbury Schweppes and Coca-Cola drinks...

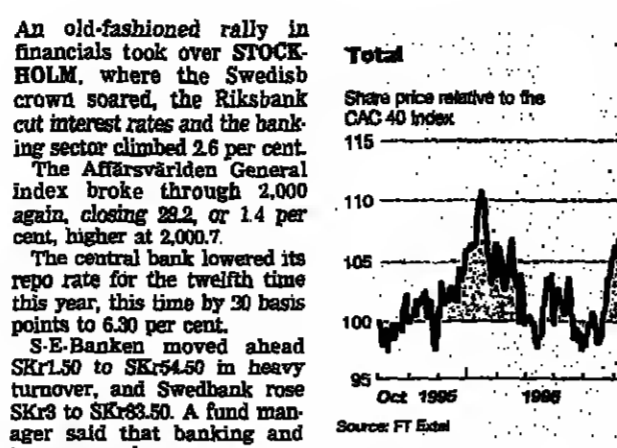
Mexico adds 1.2%

Mexico City moved 1.2 per cent higher in late morning trade, propped up by a firm peso and the healthy performance on Wall Street. The IPC index was up 39.49 at 3,231.27 in bullish trade as investors also began buying pesos on expectations that rates would rise in last night's Ceres auction...

S Africa ends off day's highs

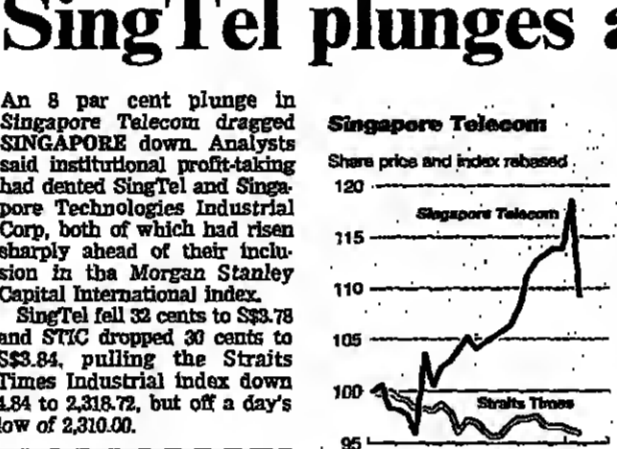
Johannesburg finished off its best levels as morning buying, spurred by hopes of an interest rate cut, tapered off and made for a subdued afternoon session. Golds were quiet, tracking the dull bullion price, as analysts cautioned that gold shares looked expensive at their current levels...

EUROPE
Sweden celebrates 12th repo rate cut this year



Total
Share price relative to the CAC 40 index
An old-fashioned rally in financials took over STOCKHOLM, where the Swedish crown soared, the Riksbank cut interest rates and the banking sector climbed 2.6 per cent. The Affärsvärlden General Index broke through 2,000 again, closing 22.2, or 1.4 per cent, higher at 2,001.7...

ASIA PACIFIC
SingTel plunges as spec favourites recover in Tokyo



Singapore Telecom
Share price and index rebounded
An 8 per cent plunge in Singapore Telecom dragged SINGAPORE down, but eventually, and influenced additionally by a strong opening on Wall Street, the general index closed 2.27 higher at 361.84...

Tokyo

Speculative stocks recovered after the sharp declines which unnerved investors on Monday, and the Nikkei average gained 1.3 per cent to 8,315.24, pulling the Straits Times Industrial Index down 4.84 to 2,318.72, but off a day's low of 2,310.00...

FT-SE Actuaries Share Indices

Table with columns: Yearly change, Q1, Q2, Q3, Q4, 12m, 24m, 36m, 48m, 60m. Rows for FT-SE Actuaries 100, FT-SE Actuaries 200, FT-SE Actuaries 300.

THE EUROPEAN SERIES

Table with columns: Yearly change, Q1, Q2, Q3, Q4, 12m, 24m, 36m, 48m, 60m. Rows for FT-SE Europe 100, FT-SE Europe 200, FT-SE Europe 300.

election results had sent the index sharply lower on Monday. The FTSE 100 index finished 0.8 better at 5314.

Blue chips, which bore the brunt of Monday's losses, bounced back. SPT Telecom jumped Kcs5 to Kcs3.276 and the power utility CEZ was up Kcs20 to Kcs1.150. ISTANBUL overcame early losses on selective afternoon demand and the IMKB-100 index finished 885.03, or 1.4 per cent, higher at 63,181.26 in sharply improved turnover of TL3,750bn...

going ex-dividend. The NZSE-40 gross index, which adjusted for dividends, finished 7.83 ahead at 3,759.84.

The Warehouse, a discount retailer, dropped another 28 cents to NZ\$2.30 following Friday's news that its 1995/96 operating profits would be around 36 per cent lower than forecast. But Air New Zealand B gained 20 cents to NZ\$4.65 after the Commerce Commission gave the carrier permission to buy up to 50 per cent of Australia's Ansett Holdings...

FT/S&P ACTUARIES WORLD INDICES

Large table with columns: REGIONAL AND NATIONAL INDICES, US Dollar, Day's Change, Pound Sterling, Yen, DM, Currency % chg, Local Index, Local % chg, Gross Div., US Dollar Index, Starting Index, Yen Index, DM Index, Currency High, Low, 52 week ago, Year ago. Rows for Australia, Austria, Belgium, Brazil, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Italy, Japan, Malaysia, Mexico, Netherlands, New Zealand, Norway, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, United Kingdom, USA, Americas, Europe, Nordic, Pacific Basin, Euro-Pacific, North America, Europe Ex. UK, Pacific Ex. Japan, World Ex. US, World Ex. UK, World Ex. Japan, The World Index.

Fortis AG
Capital increase by means of an exchange of 1995 dividend rights for shares ("Stock dividend")
Meeting on 11 April 1996, the Board of Directors of Fortis AG decided to increase the capital of the company by means of an exchange of 1995 dividend rights for shares ("stock dividend"), as follows:
Issue price: BEF 3.444 per new share, requiring a contribution of 4 Euro, 8 coupons of ordinary shares
Nature of the new shares: Ordinary shares, each accompanied by an additional coupon sheet, known as the "VVPR strip", embodying the fiscal advantages enabling the holder to benefit from a reduced level of investment withholding tax, currently 15%.

Handwritten signature in Arabic script: محمد بن احمد



Focus
IT in sport
Race for the technical edge
Pages 1-6



Directions
Larry Ellison
Champion of the network computer
Pages 7-10

Software at work
Risk management
How to stay profitable
Page 19

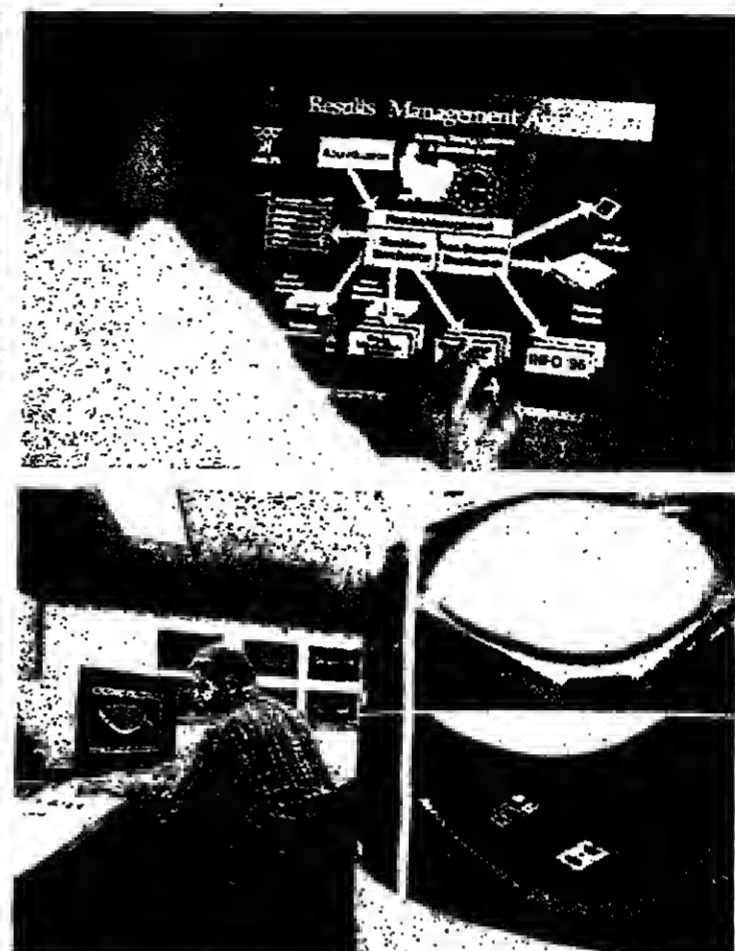


Directions
IT in manufacturing
The pace quickens
Pages 15-18

Stockwatch
IT companies
How shares are performing
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Information Technology

Wednesday June 5 1996



Preparing for the summer Olympics: main picture, far left, a 'results team' works with computers at a cycling test event; in the centre, top picture, a demonstration of the advanced on-screen results management system which will be used in Atlanta; in the build-up to the games, computer-aided design systems were used to model the new venues; elsewhere in Atlanta, a pen-based computer system, pictured above, right, is used by a technology volunteer to input statistics at a badminton test event.
Pictures: Allsport/Jamie Squire

Sporting world offers an unrivalled showcase for technology

From motorsport and football to athletics and yachting, sports sponsorship is big business for IT suppliers. IBM, for example, is among the sponsors of the 1996 Olympic Games, described as the most technologically-advanced sporting event in history



The Summer Olympics
 ● Attendance: 10,000 athletes from 197 countries, 5,500 coaches and staff, 15,000 media representatives, 71,000 staff and volunteers, and 2.5n spectators; 11.2 tickets issued.
 ● TV broadcasting: 67 per cent of the world population is expected to watch the games, making a cumulative TV audience of 3.5bn.
 ● Computer technology: four main-frame computers, 80 AS/400 servers, more than 7,000 desktop and notebook PCs, at least 1,000 laser printers and 250 local area networks.
 ● Telecommunications: 13,000 telephones including 1,700 wireless phones, more than 6,000 pagers, at least 6,500 radios, more than 500 data lines and 11,500 televisions.
 ● Other IT facts: The Olympic Web page (<http://www.atlanta.olympic.org/>) is expected to attract between 5m or 10m hits a day.
 ● Info '96, the Olympic database, contains 80 gigabytes of Olympic history, equivalent to 264,000 typewritten pages - sufficient for a paper path between London and San Francisco.
 ● The games themselves are expected to generate three trillion characters of information, enough to fill a daily newspaper for the next 30,000 years or the same as a stack of double-spaced typewritten pages 95 miles high.
 ● During the 16 days of competition, printers will produce 30m pages of facts and figures for the media. With more than 540 sessions spanning 26 sports, the Olympic committee expects to process 3,000 ticket requests an hour.

Two sporting spectacles this summer - the Olympics and the European Football Championship - will provide the world's leading information technology companies with an unprecedented opportunity to display their products and services. Indeed, given the scale, complexity and costs involved in organising and running such events, it is doubtful whether they could take place at all without using IT and enlisting the help of IT industry sponsors. Overall, North American companies will spend an estimated \$3.5bn on sponsorship of sports this year. And while the information technology industry lags behind makers of cars, cigarettes, soft drinks and other household products in total spending, it is among the fastest-growing sectors in the sports sponsorship field. Aside from International Business Machine's sponsorship of the summer Olympics in Atlanta, Georgia, Hewlett-Packard is backing World Cup Soccer, and a racing car team. 3Com, the Silicon Valley networking equipment com-

pany, has put its name on the San Francisco 49er's football stadium. Sports sponsorship may appear to be a symbol of corporate largesse. In reality, it is big business. Corporate sponsorships of sporting events - which can range from a few thousand dollars to tens of millions - typically produce public "exposure" valued at around ten times the cost of the sponsorship, according to marketing experts. This goes well beyond attracting the attention of fans in the stands at a sporting event. Television coverage of an event raises the stakes, while opportunities to entertain corporate customers are another draw. The IT industry is, however, moving beyond the traditional use of corporate sponsorship as a form of "brand marketing". In many instances, computer and software companies also provide the equipment and information technology services required by big events. As with other large events, international sports championships are logistical nightmares. For example, organising the

Olympic games is the equivalent of holding two American Football Superbowls every day for 17 days, or the same as hosting the final stages of 20 soccer World Cups simultaneously. For Euro '96, Sema Group, the Anglo-French computer services group, Microsoft, the US software developer, Digital Equipment and British Telecommunications have combined to form the technology team which is responsible for providing technology for the matches which will take place across eight football grounds from Anfield in Liverpool to Wembley. Everyone involved in the tournament, including 6,000 media representatives, over 2,000 staff and players, 1.4m ticket holders and a cumulative television audience of 6.5bn will rely on the technology. Among the projects they have already completed is the accreditation system which streamlines the normal lengthy registration process for the more than 8,000 people involved with the championship. In addition to the accredita-

tion system, other interrelated applications include the VIP management, volunteer management and materials management systems, the information system and the results service. These systems will all work together on a common platform based on Digital hardware and Microsoft Windows NT software allowing the exchange of data between systems. There will be media and administration centres in each of the eight cities. All of the systems in each venue will be linked on a local area network, and all the cities will be linked to a central server using an ISDN (integrated systems digital network) wide area network. Meanwhile, IBM has already built extensive information technology systems for the summer Olympics. During the

build-up to the games, for example, IBM has provided three-dimensional virtual reality systems used to simulate stadiums still under construction. Bob Stiles, Olympic Stadium venue manager, recalls a visit by 500 National Olympic Committee officials: "They were in Atlanta to review the status of Games preparation and were keenly interested in the (then incomplete) Olympic stadium," he said. Stiles was able to show his guests a three-dimensional computer simulated video "walk through" of the structure, (see picture, above, centre). IBM is one of the main sponsors for the Olympics, which will involve 10,000 athletes, from 197 countries competing in 271 events at 30 different venues. Over the course of the Games, approximately 67 per cent of the world population is expected to view some part of the sporting events. With no local or national government money to be spent on this year's Games, approximately 70 per cent of the Atlanta Committee for the Olympic Games' \$1.7bn budget will come from sponsorship.

According to sponsorship industry experts, about 20 companies will spend \$40m or more to become either "domestic partners" of the Olympic organisation or "worldwide sponsors", another 23 lesser sponsors will each spend \$4m to \$20m. Among IBM's other contributions to the Olympics are an electronic mail system to link all athletes, coaches and trainers, an extensive library of Olympics information on the Internet and on-site touch-screen terminals that provide event schedules and venue maps. Perhaps the most visible part of the information technology systems at the Olympics, however, will be the results system, also built by IBM, which will provide virtually instant updates on the scores and times of all events and the performance of individual athletes. IBM believes that the Olympic Games provide "an unrivalled showcase" for its technology. The company began sponsoring Olympic events 36 years ago and has already committed to sponsoring future Games in Nagano

and Sydney. Similarly, Hewlett-Packard is sponsoring and helping to facilitate World Cup soccer. This involves building systems to link ten venues prior to the final games that will take place in France in 1998. Already, plans are well under way for systems to handle ticketing, accreditation of players, coaches and other team staff, transportation and logistics. These are "mission critical applications" that will demonstrate HP's technology in action, says Katey Kennedy, HP's manager of the World Cup project. The sponsorship is the largest ever undertaken by HP which has also sponsored racing car teams, Americas Cup yacht teams, soccer and rugby clubs. For HP, the World Cup also represents an opportunity to promote its brand name among sports fans, particularly in Europe and South America, at a time when the company is expanding its involvement in retail and consumer markets for personal computers and printers.

Continued on page 2

Information

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■ Sporting challenges for the IT industry

No second chances

Around the world, few sporting events are staged without the involvement of information technology. There are special considerations which are not found in a normal commercial environment. Here, Rod Newing outlines some of the unique problems and opportunities

Imagine setting up a \$1.6bn corporation with 252 offices in 100 cities and 140,000 employees all linked by computer, telephone, digital TV, cellular and radio. Imagine you run it for 17 days and then you shut it down - that's the Atlanta Olympics.

Around the world, few sporting events are staged without the involvement of information technology. The most advanced applications of IT in sport will be at the 1996 Olympic Games in Atlanta in the US. Organising the games is the equivalent of hosting the final stages of 20 soccer World Cups, simultaneously. The games are likely to be watched by nearly two-thirds of the world's population.

Key role

IT will also play a crucial role in Euro 96 - the finals of the European football championship being held in the UK between June 8 and 16. Euro 96 which is the largest sporting event in Europe this year.

Apart from these sporting spectacles, IT is also essential to a wide variety of other activities such as motorsport, baseball, sailing, cricket and tennis, to name a few.

Even at the small club and local event level, simple database applications are now used

together.

The larger events have become so complex that they could not be planned, managed or operated without the support of the IT industry through the provision of hardware, software, services, expertise, project management, key systems, worldwide telecommunications and technology transfer.

Whatever the event, it will require a number of systems, including accommodation, accreditation, computer-aided design, event-scheduling and information systems for media and accredited personnel.

United projects

Then there is materials management, medical, project management, recruiting and managing volunteers, results, retail merchandising, security, ticketing, transportation, VIP management, weather forecasting and many others. It is important to remember that these are not just a series of stand-alone applications, but must all be linked to share the same data.

System re-use is essential to minimise the risk and cost of development. Such is the involvement of IT that organisations such as BT, IBM, EDS, Sema and Sybase, take a long-term view, using their expertise and systems in a wide range of events. In the case of the Olympics, IBM has been involved since 1980, at the Squaw Valley Winter Olympics in California, which were the first to use IT.

IBM's current agreement with the International Olympic Committee runs from 1992 to 2000, with an option to extend to 2004. Meanwhile, Sema's expertise in sports results will

be used at Wimbledon tennis championships; the company's systems will also be used at the Mediterranean games.

With the expansion of the Internet, sporting events of many types must now have their worldwide web sites which have proved to be highly popular, attracting large numbers of accesses from fans. Results are becoming increasingly scaleable, using powerful parallel processing servers. (see report below).

Another issue with sporting events is the volume and frequency of result updates, allowing computer users to chart the progress of events, as well as receiving results and accessing event information. "It is closer to broadcasting than publishing," says Jose Luis Iribarren, IBM's Manager of Olympic and Sports Internet Systems.

Another problem which sporting events pose is the need for total reliability without an opportunity for a... full-scale test - "there can be no overall dress rehearsal, only the components can be tested," says Martin Clague, general manager of worldwide client-server computing at IBM.

"The systems must be architected against failure," he adds. "During development, you have to make trade-offs, because you can't chance new untested technology just because it offers potential. You make lots of mistakes, but the most important thing is to capture what you don't know and move on."

Sponsorship of large sporting events (see report, page one) provides considerable commercial



Split-second timing is crucial in motorsport. Since 1982 the Swiss company TAG Heuer has been the official Formula One timekeeper and also a sponsor of the Ferrari and McLaren teams. The margin for error is almost non-existent, since success or failure can hinge on a thousandth of a second. Pictured here is Formula One driver J.J. Frenzen in action in the Grand Prix d'Argentine.

benefits to IT companies. Eli Primrose-Smith, the former international swimmer who is now IBM's director of worldwide Olympic and sports operations, acknowledges that the event provides a unique showcase for technology: "This is IBM's greatest opportunity. The Olympics are watched by 2bn TV viewers, equal to two-thirds of the human race, in 195 countries. It has worldwide impact and the Olympic rings are the best-known symbol after the Christian cross."

The relationship between sport and IT is mutually beneficial. IBM has been a valued partner of the World Wide Olympic Movement since 1960," says Juan Antonio Samaranch, president of the International Olympic Committee. "We only get one shot at it," he says.

IT sports systems are unlike any others - "they are mission critical and high profile. There are no disasters and there is no second chance," comments Billy Payne in Atlanta.

A similar view is expressed by Glen Kinton, Euro 96 tournament director at the Football Association. "We only get one shot at it," he says.

■ Sport on the Internet. By Stephen McGookin

Wired-up sports fans log-on for computerised, collated statistics

The Net is a natural medium when it comes to analysing and presenting the kind of intensive statistical information on which sports analysts depend

Every time Tottenham's Teddy Sheringham scores yet another Premiership goal; or Cecil Fielder hammers a home run out of Detroit's Tiger Stadium; or Charles Barkley loops in a three-pointer for the Suns, there's someone, somewhere, who lives for the stat.

And with the proliferation of fantasy sports games on both sides of the Atlantic over the past couple of years, there are countless thousands of Internet users who log in regularly to keep up to date with the exploits of sporting heroes they might never actually watch in the flesh.

In the US, fantasy leagues are big business and there are hundreds of companies selling computerised, collated statistics, custom-tailored to the needs of armchair sports fans, for whom a black and white box score can literally bring a game to life.

Visitors to the site will be getting practically the same information as journalists in the tournament's eight media centres, with the aim being for the site to be updated from the results service approximately every 10 seconds.

The site has exclusive rights to television and radio highlights throughout the tournament, and it also features a Fan Forum, similar to an interactive Usenet newsgroup.

But over and above the hundreds of bulletin boards, chat rooms, newsgroups and mailing lists where sporting performances can be critiqued and debated, the Net is a natural medium when it comes to analysing and presenting the kind of intensive statistical information on which sports analysts - amateur and professional - depend.

When Britain's Electronic Soccer launched its fantasy soccer game last year, based on the English premier league, it was overwhelmed with entries; both from existing users of the paper's site and a significant number of new recruits.

It has been a perfect example of an information provider giving a premium, added-value service to its audience, who largely consider the £10 entrance fee worth paying.

With soccer's European Championship tournament about to begin in England, the Microsoft-led official site (www.euro96.com) is an integral part of the tournament's overall information distribution set-up.

PowerPlay, an Internet-based product from Massachusetts company Cognos, is capable of processing a high volume of statistical data and presenting it in a way that lets the user see it "multi-dimensionally" - in multiple combinations or views; similar, as the company says, to turning the faces on a Rubik's Cube.

For instance, using PowerPlay to analyse baseball statistics allows the viewer to ask very detailed questions relating to the performances of teams and individual players in specific situations.

If he really needs to, a fan could find out how well a particular player hits against right-handed pitchers in night

GO ON, SURPRISE US - WHAT IS THE AVERAGE SHOE SIZE OF THE ALBANIAN EURO96 SQUAD?



RUBIK'S CUBE

games on the road during August; with two outs in the seventh and runners in scoring position.

Ketan Karia of Cognos says the company is developing and expanding the applications for the technology specifically for Europe and the UK.

While soccer tournaments are a natural, there is also the more serious business of politics. With a general election looming, tracking individual daily opinion polls and analysing their findings could be made easier and much more productive.

"With this product you just throw the data at it and it gives you breakdowns from lots of different angles," says Karia.

The corporate applications are also extensive, he believes. "Companies don't always realise that their information is a commodity. We're targeting organisations who have lots of data locked up and trying to change the way they use their information."

PowerPlay, which recently won PC Week's IT Excellence award, is the world's most

widely-used software for this form of online analytical processing. Details are available at the Cognos web site (www.cognos.com).

With the centennial Olympics coming up in Atlanta, IBM expects the official games Web site (www.atlanta.olympic.org) to generate between five and 10 million hits - or about three million visits - a day.

The information logistics of holding two Superbowls every day for 17 days, or 20 World Cup Finals simultaneously - means the challenge of getting the results out quickly and accurately has never been greater.

While this is the first time Olympics results have been accessible through the Web, IBM believes the official site will be "the closest thing to being at the Games."

The Atlanta Journal-Constitution's Olympics countdown site (www.atlanta-journal.com/olympics/index.htm) is also well worth a browse.

Looking even further ahead, EDS is the official information technology services provider of

the 1996 World Cup Finals in France, and is planning to build on its success at the last finals in USA '94.

But for the wired sports fan, there are literally more sports Net sites out there than you can shake a Louisville Slugger at.

Use a search engine to narrow down exactly what you want, but as far as originality and general sports enjoyment goes, there are one or two worthy of a special mention.

- Baseball: check out Fastball (www.fastball.com), the Cox newspapers' site which makes extensive use of RealAudio to provide hourly sports updates.

Entertaining

Sportsline USA (www.sportsline.com) is an excellent subscription-based service which among a wide range of hugely entertaining material, has a 'live' play-by-play facility which shows a graphical representation of every game in progress together with automatically refreshed box scores.

John Skilton's Baseball Links (www.pc-professor.com/baseball/) is one of the most comprehensive and well-presented resource pages, with excellent coverage of the minor leagues and top-notch stats links.

- Soccer: Absolutely the place to start is the Virtual Library (www.atm.ch.com.au/sports/weba.html), which has links to nearly every soccer site on the planet.
- Basketball: The official NBA site (www.nba.com) presents the corporate face of the game; while Glenn's Basketball Links (www.cyberbase.net/Egypt/sports/basketball/) collates more hoops links than the average fan could ever need.



Satellite systems in the round-the-world yacht race now transmit position, course and speed, four times a day. Pictured here: Heineken leads Winston in the Whitbread round-the-world race for the Heineken Trophy

FT

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There is no review in August; the main themes for September will include:

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The high value of sports sponsorship

Continued from Page 1

As is typical of most sports sponsorship contracts, EP will be given prime billing on event literature and at promotional events. Beyond that, however, it is up to the company to leverage its investment in the sporting event, said Ms Kennedy.

This may involve advertising linked to the event, press guides and events, billboards and promotions with local dealers in places where the World Cup is heavily watched.

In the motor racing world, aficionados of Grand Prix will follow the Saturday afternoon qualifying session almost as closely as the race itself on the following day. The fastest time gives pole position and, on many tracks where overtaking is virtually impossible, a huge impetus towards victory.

Accurate timing is vital. Since 1992 the Swiss company TAG Heuer has been the official Formula One timekeeper and also a sponsor of the Ferrari and McLaren teams. The margin for error is almost non-existent, since success or failure can hinge on a thousandth of a second.

In the media centre and in

the pits, press and engineers rely totally on a series of five computerised screens provided by TAG which show lap times, average speeds on different sectors, and a continually updated table of fastest drivers. During practice or qualifying, with up to 26 teams on the circuit the flow of information can be astonishing.

"Formula One presents the company with one of our greatest challenges, where split-second accuracy and precision must be totally guaranteed," said TAG Heuer chief executive Christian Vitz.

Golf might seem the antithesis of Formula One, a sport where hours not micro-seconds are the temporal currency. Yet the complexities of recording and relaying the results in a key competition such as The Open are a challenge to information technology.

Four days of play, 156 players over 72 holes and a public and media demand for a real-time leader board gives the service provider a major challenge.

Unlucky has been the Royal & Ancient's partner since 1980. It now deploys hand-held radio terminals at each green to send results directly to a central

scoring system. From there it goes back to leader-boards scattered around a course that may be up to 10km in length.

It takes around 14km of cabling to service the 100 PC workstations and printers dotted around the course. Two Unix servers (one for back-up) are based at the course in a trailer. "We have to run from 7am until 10pm with zero downtime," says David Fox of Unlucky. "We can't afford a failure. Apart from the scoring system for officials and spectators, we provide computer graphics for the BBC and other TV broadcasters."

Yet the geographical demands of a golf course are as nothing compared with the spread of a round-the-world yacht race. In September this year, the BT Global Challenge sails from Southampton. Fourteen yachts racing a 32,000-mile course over a 10-month period. Gone are the days of snaptrackle and pop over high frequency radio. Each boat has an Inmarsat C terminal that will transmit position, course and speed four times a day, more often if requested.

At race headquarters BT

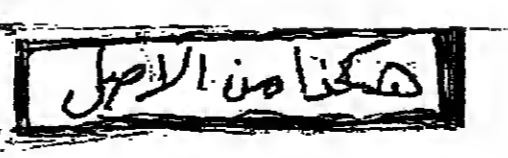
staff will make the data available via dial-in database that anyone with a fax can download from. In addition the current positions and situation will be constantly available from a World Wide Web site.

The Internet's multimedia capability means there are likely to be audio and video clips available from crews and skippers whilst the yachts are at sea, making Cape Horn as audience-friendly as the local football stadium.

There are, of course, risks attached to sports sponsorship. In the World Cup, for example, teams representing countries that are prime markets for HP could be knocked out in the early rounds.

Scandals involving athletes, violence in the stands, bad weather that forces the postponement of a big event, political tensions leading to an Olympic boycott, the crash of a sponsored race car - could significantly reduce the value of a company's investment in sponsorship.

Yet industry experts maintain that the high value of sports sponsorships that place a company's name in the view of millions of sports fans, far outweigh the potential pitfalls.



Electronic results systems • By Rod Newing

Scoring with pin-point accuracy

As many 'live' sports events attract worldwide audiences, instant sports results have such a high profile that the behind-the-scenes information systems cannot be allowed to fail

When it comes to results, broadcast to 150 countries, "you can't get it wrong - because if you do, several hundred million viewers will know a few seconds before you do", warns Martin Trees, marketing director of Sema Group, who are the lead technology sponsor to Euro 96.

"Quality is so important because the results system provides an automatic 'feed' to a live TV graphic," he says. This sums up one of the many challenges which face IT companies responsible for the systems which record sports events as they happen.

While an event is in progress, systems are needed to

record statistics, provide them to broadcast commentators, along with competitor details and to record results. When the event is over, the results need to be made available to the organisation itself, officials, athletes, media and the world at large. These high-profile systems are "mission critical" and must not fail.

The results exercise has to be done not once, but repeated over and over again: the Olympics, for example, involve 26 sports with 37 disciplines and 271 medal events at 27 venues. The results system for Euro 96 involves 31 large-scale soccer events at eight grounds. It is also vital that these systems are intuitive and easy to use,

Laptop PCs

At the Atlanta team events, volunteers stationed at event sites will be equipped with customised pen-based laptop computers with interfaces that duplicate the sport's field and uses sport-specific language and symbols for likely events and players.

The 'pen' allows observers to touch the screen symbol of a player, then a spot on the field of play and then an action which occurred. This allows

non-technical volunteers to register the action as it happens, such as capturing which basketball player just made an assist or which football player scored a goal.

The system can be configured for different sports and provides a feed through a wireless local area network (Lan) to the results, information and Internet systems.

Euro 96 has a similar system to the one in Atlanta, but it uses a Digital Ultra Hi-Note pen-based system with a mouse, which users prefer.

At judged events, officials enter scores, which are then forwarded to the head judge who holds approval or veto power. In events such as gymnastics, where scores are averaged, the approved marks are automatically averaged to deliver the final score.

Other systems capture details of times events, which are then communicated to the results system. For instance, at an Olympic track event, Swatch measures time, speed and distance by using a high-speed camera that samples the image of the finish line thousands of times a second. This information is digitised and integrated into the results system.

Having captured statistics and results at the venue, the system must compute the meaning of this score within the context of the competition and transmit the data to a variety of integrated information systems. Systems must be constantly improved to keep up with the public thirst for information - "with the results system, you have to keep it simple, but deliver something new and exciting to the customer," explains Mr Trees.

Every large event has to keep everyone involved up-to-date with what is going on, which is done through information kiosks. These provide reference material, such as competitor biographies and images, event history, current records, schedules, transportation, weather forecasts and entertainment. These kiosks also provide key information such as latest sports headlines, news flashes, full results, statistics, new records and so on.

Electronic-mail and bulletin boards are also provided at the Olympics, allowing competitors, officials and the media to communicate with each other.

This system needs to be updated regularly from the results system: at the Olympics this is done every two minutes.

Commentaries

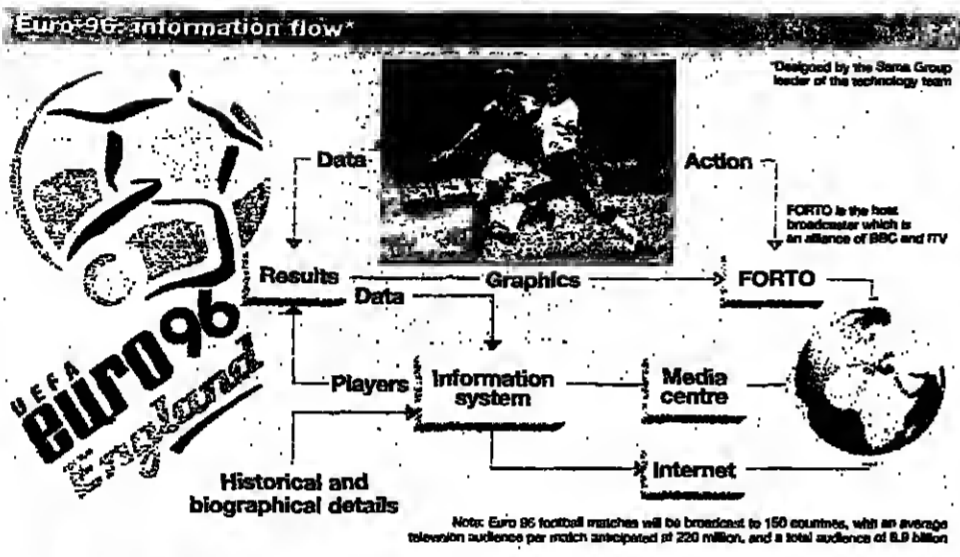
The broadcast media need to be able to provide up-to-date information, so a commentator information system is required. This takes a 'feed' from the results system to show statistics about the current event and results from others which are going on at the same time, plus another feed from the information system to provide athlete biographies and statistics.

Commentators need to log in with their nationality, so the system can highlight information on their national athletes.

"The biggest problem with results systems is the requirement not to interfere with the event," says Bruce Sanders, from IBM's 1996 Olympic Games Project Team. "Back-up and redundancy is needed at every stage in the system, as event schedules cannot be missed because of faults in timing or scoring systems."



Paul Gascoigne in action: while rival teams across Europe were in intensive training in the run-up to Euro 96, England players, returning from the Far East, were caught up in a blaze of publicity as the Football Association - the hosts of the tournament - later launched an investigation into an incident during a 13-hour flight on a Cathay Pacific 747, in which two video screens were smashed causing £5,000 of damage during a party to celebrate Gascoigne's 29th birthday. Last Sunday, the England squad resumed training at their Burnham Beeches headquarters. Euro 96 is expected to generate total revenue of more than £150m.



Euro '96' • By Michael Dempsey

Technology team with a very serious goal

Euro 96 presents a big technical challenge for the Sema Group and its IT partners

The 16 national teams participating in Euro 96 have their hearts firmly set on sporting glory. Martin Trees, marketing director of Sema, the £700m European systems and services group, has an even more serious goal: Sema will be earning a large chunk of the £10m being shared between the four technology partners organising Euro 96.

But Mr Trees reckons that in its role of co-ordinating efforts by BT, Microsoft and Digital Sema can put its own name on the map - "to be realistic, we're doing this purely for the marketing," he says. This sporting event offers Sema the chance to prove its ability to create a virtual company to next to no time under a glare of media attention.

By the first kick-off on June 6, Sema will have delivered the management systems to run a 10,000 strong company. This commercial entity will have sprung out of nowhere, and will have no inherited management structure.

Accreditation and keeping track of VIPs is a big headache in the largest footballing event staged in England for 30 years.

Furthermore, members of the media corps following the championships have differing levels of access to matches and venues. Behind the badge carried by every player there will be a database of human details, covering everything from dietary requirements to the level of security required. Clearly, some nations are

considered as more sensitive than others in the security area. Sema, which has considerable experience in this field through contracts with the French military - among others - is justifiably tight-lipped about certain elements of the accreditation process.

Badges, for example, will only be produced at the last possible moment: given a tight timescale, there can be no room for error in the data attached to 15,000 badges. Meanwhile, Microsoft has performed a key role in sorting out accreditation. Philip Stradling, Euro 96 project manager at Microsoft, explains that while Sema developed much of the system specification in Barcelona, his people helped shift a team of experts in the large mainframe computer environment over to the world of Windows 95.

"We put people out there to 'hold hands' and to get over product information and key issues about the client server side of things," he says.

Graphics

The importance of graphics in transmitting coverage of sporting events played up to the products in which Microsoft excels. The company's experience in easy-to-grasp graphical interfaces was needed if UK Football Association staff were going to come to terms with the new system in a very short time.

Mr Stradling says Microsoft entered the Euro 96 consortium in the autumn of 1995. With Microsoft's best-selling Office software package, a standard project tool set of graphics were needed to bridge the divide between that software and the accreditation system - "we integrated office

and accreditation systems with one interface because we don't know from one day to the next who'll be using which system for what purpose," he says.

The idea is to build an environment where users can switch from one role to another without being aware of moving to a different system.

Graphics, as Microsoft has long proclaimed, are a useful way to cope with different types of data. So Microsoft echoes Sema's ambition of using a football championship to get a deeper message across.

The four IT partners each have separate contracts, says Mr Stradling.

"At Microsoft, we get marketing rights, promote our brands during championships and get across the Microsoft message that we're not just about consumer software. We are a serious company for business. And this event is Microsoft software from tip-toe."

Mr Trees and his colleagues appear to thrive on the scale of the challenge. Euro 96 will come into being with an impressive inventory of mobile phones, laptop computers and associated software packages that all need to be tracked and returned after the event.

Sema's 100-strong team, to be boosted to more than 1,000 during the event, have created an asset register from scratch. He contends that "building this system from the bottom-up using completely fresh applications - and the latest computer servers from Digital - has given his colleagues enough space to get the job done."

"The exploitation of client-server architecture, with clusters of PCs wired to powerful Digital servers, will deliver IT

Continued on next page



Looking ahead to Euro 96: the Sema Group, Digital, Microsoft and British Telecom have developed and supplied the IT solution and business support structure for the European football championships. Pictured here at the Football Association, London, (left to right, standing) is Adam Wharby of Microsoft, Martin Trees of Sema and David Townsend of Digital. In the front row is Sir Burt Mitchell of the Football Association with Vanessa Miner of BT and Stephen Clemence, England under-18 player

In April 1996 Personal Computer Magazine gave the Hewlett-Packard Vectra XM4 a highly impressive test-drive.

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■ Euro 96 security • By Danny Bradbury

Troublemakers will face swift police action

While the international TV audience for each match will exceed 200m, the police will be discreetly making their own on-the-spot networked security videos

Ten police forces in the UK have constructed Britain's largest-ever computerised "football intelligence" operation for the Euro 96 tournament this month. Police forces including the London Metropolitan Police, British Transport Police, Merseyside, Strathclyde, Greater Manchester, West Midlands and Nottinghamshire constabularies are collaborating on a nationwide digital database which allows them to digitally transmit information on potential troublemakers in between regional centres.

The information, including pictures of potential and known troublemakers, can also be transmitted to and from police vehicles located near the 31 matches being played at eight cities across England.

Mobile officers using Toshiba Pentium laptops with Photo-phone software can extract frames from hand-held video

cameras and send them directly to other mobile units or to a regional site for general dissemination. The project will provide links into similar systems run by the British Transport Police, Scottish Criminal Intelligence Football Unit and the National Crime Information System (NCIS).

Designs for the advanced system began early last year and equipment was distributed in April. The computers were connected up to the Police National Network in May. The system uses eight Sparcstation 20 workstations (worth £100,000), loaned from Sun Microsystems, running the Crimint database system, supplied by MR-Memex. Information will be transferred over cellular phones from police cars to the Sun computers based at regional intelligence centres. Information can also be transferred between servers across the country using the Mercury

Communications Police National Network.

Det Chief Supt John Barker, who is senior investigating officer for Euro 96 at the London's Metropolitan Police, explains the benefits of the system: "It will enable us all to share information about potential troublemakers, known troublemakers and incidents that have occurred which will help us to define how we will approach incidents in each area."

A typical solution may involve a person who is being disorderly when boarding a train for a championship venue. Police officers can transmit a picture of the person to a mobile unit at the destination site, which could then observe the troublemaker at the match. In addition, details on the person's history could be accessed by the mobile unit, if he was a known offender.

Det Chief Supt Barker emphasises the logistical difficulties of communicating without such a system - "It would have been down the telephone, by fax or telex. We wouldn't be

operating from the same protocols, so there might be different information stored on one regional system than on another. This system ensures that there are standard protocols with built-in safeguards to ensure public protection."

Mr Paul Oatway, head of the hybrid networks branch within the Metropolitan Police department of technology, says that the Metropolitan force has been "back-populating" Crimint from an existing operational installation especially for Euro96.

The Metropolitan force has sized the database for Euro96 at 30,000 intelligence reports. "Crimint is a textual intelligence database - and that text can be either in fields of names or attributes of individuals," he says. Pictures will be stored alongside text in the database for transmission.

The systems will be linked to the 12 database from the Cambridge-based company of the same name. This product allows the police to visualise networked relationships between people, locations and football clubs.



■ Olympic ticket distribution • By Marcia MacLennan

Bad news for ticket touts

The ability to follow any parcel of tickets from collection to delivery worldwide gives organisers and buyers strong confidence in the distribution service

Eleven million tickets for the Olympic Games will be available worldwide, but even that high number may not be enough to prevent disappointment among last-minute visitors, hit by a late attack of Olympic fever. Ticket touts will be hoping for a corner of the market.

The anticipated demand for tickets has led the Atlanta-based global parcels carrier, United Parcel Service (UPS), one of the 12 official sponsors for the Games and the company responsible for distributing tickets around the globe, to devise a security strategy which would defy even James Bond.

A "closed loop" package tracking system, based on the Delivery Information Acquisition Device (Diad), pictured below, links the UPS global tracking network with the ticket-order database, run by the Atlanta Committee for the Olympic Games (Acog). This system assigns each ticket order a unique tracking number which can be traced over the UPS system by the carrier's staff or Acog employees.

Each package of tickets is bar-coded and scanned as it moves through UPS's hub-sorting equipment. Location information is fed automatically into the Acog database. UPS

delivery drivers sign for the ticket package on collection, and record the data on Diad.

Diad, used for all UPS collections and deliveries, is based on hand-held computers which the drivers take on their rounds. The hand-held units are stored in a "base station" overnight to both re-charge their batteries and to receive driver instructions from the UPS mainframe. When the driver collects his or her hand-held unit the start of a shift, the machine lists the customers to be called on that day.

Company names, individual contacts and consignment details - for example, "ten packages, each holding 100 Olympic tickets" - are displayed on the screen.

When a collection has been completed, the driver keys confirmation of the pick-up into the hand-held, noting any discrepancies, such as "only five packages were ready for collection instead of ten".

Upon returning to his vehicle, the driver places the Diad in a Driver Vehicle Adaptor (DVA) to download the collection details into the UPS mainframe.

The same process is followed for deliveries. The driver

obtains a list of the day's calls - the list having been downloaded overnight to the hand-held computers.

As a driver reaches a delivery site, the bar-code labels on the packages are scanned to enable the shipper's name and number to be entered into the system. The driver keys in the number of packages being dropped off and the time of delivery, and prints the name of the person accepting the package.

More importantly, the person receiving the goods also signs the hand-held unit with a special stylus to provide a digital signature and proof of delivery. This could prove especially valuable should any Olympic tickets go missing, or turn up in the wrong hands, since the person signing for the package should be traceable.

The hand-held computer is again slotted into the DVA to update the UPS mainframe, providing real-time track-and-trace capability throughout the package's journey.

The ability to follow any parcel from collection to delivery gives customers strong confidence in the service. In the case of tickets for the Olympics, that confidence is boosted by the knowledge that, for the 1996 Games, black marketers will be the only real losers.



This hand-held computer captures ticket delivery information electronically, including consignee's digitised signature

Euro 96: 'The perfect IT exercise'

Continued from previous page:

"muscle" where it's needed. "If you're sitting in Wembley, you can find out where the VIPs are in Newcastle - it's all hubbed around our Birmingham data centre with automatic updating across the eight venues."

The use of a distributed database, essentially eight copies of the one product held in each of the participating cities, is key to the security of the whole event, explains Microsoft's Mr Stradling. "The unique thing about this accreditation is that takes place across eight locations. Accreditation is about who's allowed where, rationing limited amounts of space and dealing with security. "If there is a last-minute

change of a person's itinerary, we can issue a new badge from whatever stadium they are at. But at the same time we update the distributed database so there aren't two badges out there for the same person at the same time."

The other key aspect of this system is resilience. With eight current copies of the database, Euro 96 gets a level of data back-up many financial institutions would envy.

Creating an entire IT department out of thin air and focusing its efforts on a very specific sector is formidable enough. Sema knows that it will all disappear within 24 hours of the final whistle. "This outfit came into being a week before the competition starts and dies the day after

it," is Mr Trees' rather brutal summary of his new baby's lifespan. Sema thinks Euro 96 is "the perfect IT exercise... this plays to our forte, tying the latest technology together and guaranteeing it will be all work on time," says Mr Trees.

He sees three elements in the Euro 96 package - and two of them demand an uncompromising approach from the suppliers. "You can't change the quality - you only get one shot at the event. You can't change the timing. It starts on June 8 and if your systems are late for that, you are in big trouble. You can change only the resources you devote to it."

One development at Euro 96 is the advent of live TV graphics, fed from the championship

information system directly into TV feeds. When a red card is waved at a player, the offender's identity and other details will be tapped into the system by Sema, converted into an appropriate graphic, and flashed straight on to TV screens.

Mr Stradling sums up the way a sporting event has tested the mettle of commercial systems experts: "I've been involved in rapid development of applications before. But this system needed a big infrastructure, including all the dedicated telecoms links from BT. The end-result might look straightforward, but knitting a total of 40 local networks together and creating one nationwide data network has been a big challenge."

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By Steve Thom UK Stock Mark

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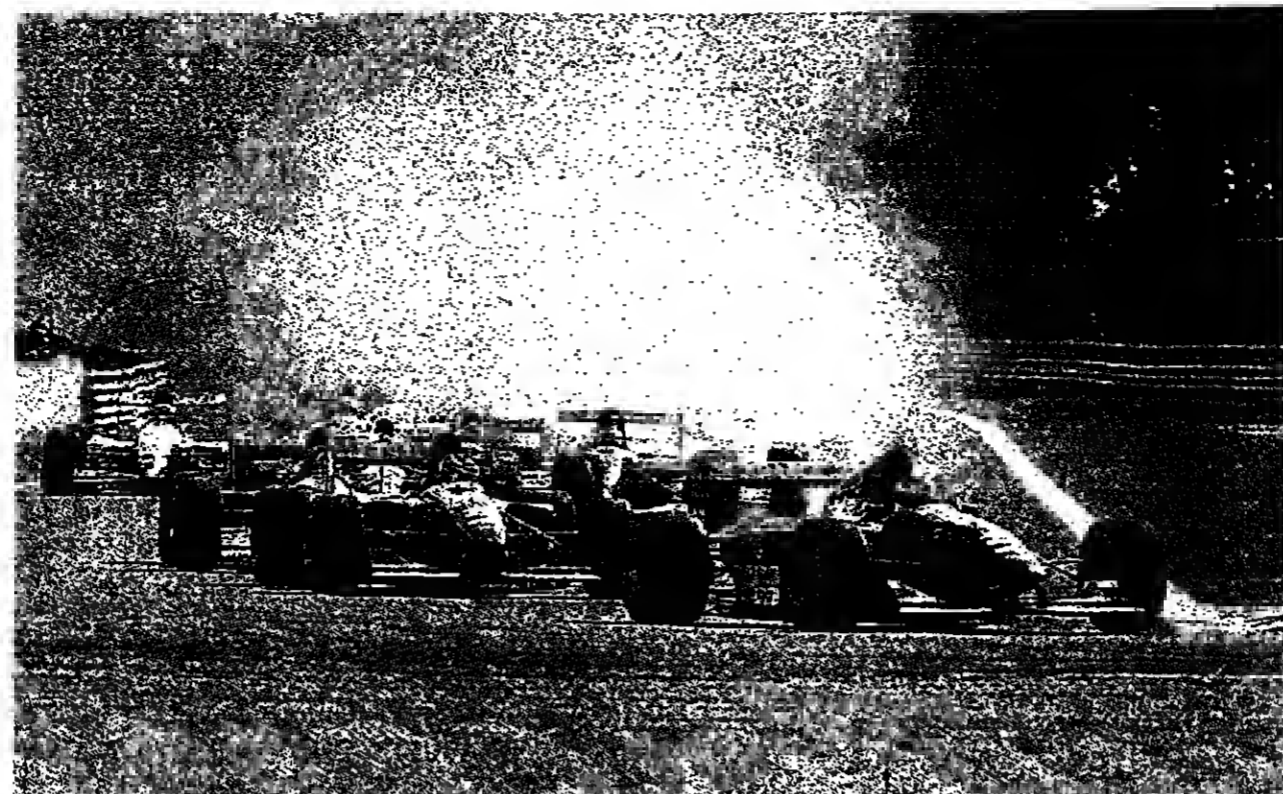
Motorsport

Capt. Kirk would be impressed

Grand prix cars are now 'test-driven' on computers before they are built. On and off the track, the electronics are so advanced that some observers ask if grand prix is really a sport at all

Were they to wander into the pit lane garage of a grand prix motor racing team on a race weekend, even Captain Kirk and the flight deck crew of that endless space 'soap' Star Trek would be impressed. The banks of video monitors and computer screens flicker and constantly change. Before them sit earnest technicians as silent and intent as any on the Starship Enterprise. The streams of incoming telemetrised data, however, concern not make-believe aliens but vital information on the mechanical health, dynamic behaviour and stress loadings which will determine success or failure for the half-tonne, 700-horsepower projectile which is a modern Formula One car.

Less than two decades ago, even grand prix, the pinnacle of motor racing, was of the genus known as "suck it and see". The car, engine and gear-



As cars surge away in the Italian Grand Prix, information technology, behind the scenes, records car performance - plus each driver's mistakes, every nervous lift of the throttle before a bend... all revealed by a pitiless stream of computer printouts and bar charts

"seat of the pants" feel, that real performance will be measured against the computer-aided design, simultaneous engineering, computational fluid dynamics, finite element analysis and host of other IT-based techniques by which the car was created. It should thus come as little surprise that, given this level of complexity, a leading grand prix team will employ 150 or more people, perhaps 70 of whom will travel to the 16

grands prix scattered each year around the globe. Nor do leading multinational sponsors express surprise any longer that Jackie Stewart, for example, estimates that he will need a budget of approaching £30m a year to run the new grand prix team he is setting up in partnership with Ford to take to the tracks in 1997. Some question whether this mechanical and electronic maze makes grand prix or its North American equivalent, IndyCar racing,

a sport at all. Geoff Banks, sponsorship manager of computer systems group Hewlett-Packard, which provides support to the Benetton and Jordan teams in grand prix and Bobby Rahal's IndyCar Team Rahal in the US, insists it is - "for about 90 minutes, and just on race weekends." It is undeniably a sport with a difference, depending as it does so heavily on a team's ability to source, develop and utilise the latest available tech-

nologies in order for the human resource - Messrs Michael Schumacher et al - to function at its full potential. The full application of IT to motor racing has more facets than might be immediately obvious to anyone not closely familiar with the activities of Computervision, HP and other IT companies closely involved with the racing scene. The use of computer-aided design and manufacturing technologies has a more urgent

importance to a motor racing team than even mainstream vehicle producers. A grand prix car's body tub moulding, its suspension parts, even occasionally major items such as transmissions, must be brought from first concept to roll-out in the space of a few months, or even weeks. Nor does this process take place in isolation. Even within this

Without IT, motorsport teams are lost, writes John Griffiths

short timescale, flexibility must be built in to allow a sudden change of design criteria - such as a new safety requirement or other change of rules. Race teams are more demanding, too, of the IT equipment itself. Ford can bring to production readiness a road car using design and engineering staffs at office desks and permanent work stations - either its own or those of major components or services suppliers. A grand prix design and development engineer is just as likely to need to access the team's main design and engineering functions from the workbenches of a small specialist supplier, a windtunnel or even the blustery side of a racetrack. Sophisticated laptops, palmtops and miniaturised fax and data modems are the required order of the day. CAD, CAM and other IT might mean that the freshly-

built modern grand prix car starts much higher up its potential performance 'envelope' than its forebears. But it nevertheless requires sustained on-track development to shave away the tenths and hundredths of seconds which can prevent a team's drivers from reaching the podium.

For this, data acquisition systems - telemetry - is essential. As H-F's Geoff Banks points out, the data streaming from the car needs to be available to all the team, and in readily understandable form. Whether for instant analysis track-side, or for usage later within the main database, such informational represent the fundamental "building blocks" in development of the car.

It is on race weekends that the importance of IT becomes overwhelming. Drivers and engineers need to know, precisely, every aspect of the car's performance. Such is the sophistication of the equipment that every section of the track, how quickly the driver passed through it - measured by suspension loadings, yaw angles, gears engaged and the shifting patterns of engine revs and power - is mapped in minute detail. The data can be compared between laps, the team's cars and each team driver.

For the driver, it's all potentially bad news, for IT is the land of no excuses. Every mistake, every nervous lift of the throttle before a bend - all are laid bare by the pitiless stream of digits and bar charts. But for engineers, designers and team managers, it is the meat and drink of decision-making. Without IT, a team is lost.

Race for winning designs

Continued from previous page

neer with the Jordan Grand Prix team.

Jordan uses Precision Engineering Cad software from Hewlett-Packard running on HP 9000 workstations. While most of the design work is done in two dimensions, 3D is being increasingly used, particularly for modelling surfaces whose aerodynamic performance is critical. In the past, craftsmen built moulds for these surfaces using schematic drawings.

"But by creating the 3D surface on computer we eliminate the human error in interpreting the drawings," says Taylor.

Details of every component are stored on the system, making them readily accessible if a car has to be modified in a hurry, for example. During the 1994 season, teams had just two weeks to implement significant design changes imposed by the sport's governing body following a spate of fatal crashes.

F1 racing may have the highest stakes and biggest budgets, but other sports are increasingly technology-driven. Manufacturers of golf clubs, rackets, skis and snowboards, for example, use new composite materials - and Cad/cam software - to design lighter, better performing equipment.

Cad systems are also being used to plan sporting events. The new Olympic Stadium in Atlanta, for example, can seat 85,000 people. But not all seats have an equally good view, so IBM used Cad systems running 3D visualisation software to determine which seats justified higher-priced tickets and where to place TV cameras. Computer-generated renderings showed architects and organisers how the finished stadium would look before it was built - and how it will appear when converted to a baseball park after the Olympic Games.

Monitoring performance

Despite the huge lead Damon Hill had built up in this year's Monaco grand prix, he had so desperately wanted to win, he knew the attempt was doomed long before the engine of his Rothmans-William-Resault cried 'enough'.

Like an implacable judge passing sentence, the telemetry had told him - and the engineers in his pit - that there could be no reprieve. And no one doubted its word.

There was no point. It spoke with the authority of 100 electronic sensors; monitoring every engine function; streaming not bopes or fears but hard, cold data from car to pit. Simultaneously, other telemetry streams were conveying their tales of woe, or 'all's well' or - most crucially - warnings to teams still surviving the mayhem in the streets of Monte Carlo.

Even in the Hill pit, no-one wants to shoot the IT messenger.

Team support

Motor racing has evolved into something far more meaningful than a few high-profile hardware outlets for IT companies such as Hewlett-Packard and Bentley, HP's sponsorship manager.

Jordan, based at Silverstone, was a logical choice for what, Banks makes clear, is very much a partnership. HP pumps no conventional "sponsorship" money as such into one of grand prix's youngest teams. What it does do, he adds, is provide a wide variety of hardware, software systems and "24-hours-a-day, seven-days-a-week support for the team, whether at the Silverstone headquarters or anywhere in the world a team member can combine a GSM or satellite phone with a laptop or palmtop".

Technology does not have all the answers

On the race track, electronic sensors monitoring every engine function, sending hard data from car to pit

ger, because for every message of 'no hope' it provides, over the course of a season and over all the teams, hundreds more that warn in time of mechanical problems ahead - and allow corrective action before catastrophe.

Such telemetry - once two-way to the extent that grand prix cars by now could have been driven by remote control, with no drivers aboard, had not the FIA governing body curbed it - covers all the operating functions of a grand prix car.

But an examination of just the system for the engine - in this case, the Cosworth unit of the Ford-Sauber team - gives

an idea of its complexity. The data outputs from all the engine sensors are captured by the engine control unit (ECU), itself pre-programmed to send relevant material to the monitors in the pits.

The raw information is also sent to a data storage unit in the cockpit which is both a data-logger and communications controller.

The data stored here is highly detailed, extractable on each pit visit and, transferred to a PC, can instantly expand on a problem which may have been shown up in outline on the telemetry.

Each of the two team cars also has a separate, dedicated monitor. On this display, engineers read data displayed in numerical form, in real-time,

or in graph form for full examination later. Just a few of the parameters surveyed include oil and fuel pressure, oil and water temperature, engine rpm, fuel consumption, gear selected and speed.

A PC is used to re-programme electronics in the car where deemed necessary, a complete reprogramming taking a mere two minutes. It all sounds almost fool-proof and highly complex, and it is - particularly when multiplied by the data streams involved in the setting up of

suspensions, corner loadings and all the other dynamic parameters of performance beyond the engine.

Happily, however (at least in the view of some), it also remains one of motor racing's enduring attractions that even when showered with today's state-of-the-art IT technology, cars can still confound their designers and infuriate their drivers.

None of the current crop of grand prix cars, in truth, ever comes new "out of the box" fundamentally unreliable, or

handling, in racing parlance, "like a pig" - despite what a disaffected driver might say.

But the fractions of a second per lap which now usually mark out the winners from the also-rans, and which over a whole race can build into half-minutes and half-miles, clearly - as the race results repeatedly show - can continue to remain frustratingly elusive for some of the best-run and best IT-equipped of teams.

Technology does not have all the answers. Yet.

IT partnerships with motorsport

Motor racing has evolved into something far more meaningful than a few high-profile hardware outlets for IT companies such as Hewlett-Packard and Bentley, HP's sponsorship manager.

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Jordan was already using HP's ME30/ME10 systems for the design of its cars and HP

hardware for its telemetry. And Hewlett-Packard France is a long-time associate of Peugeot, the French vehicles producer whose engines power the Jordans. No less appropriately, Eddie Jordan's team was 'born' with IT-only systems - "I think it's the only GP team that has never had a drawing board," says Banks. "FI reaction times are minuscule, so it's a perfect training ground for a whole range of products and solutions. It also requires us - HP and Jordan, as a team - to be proactive and to plan ahead. Hardware on its own is not a solution."

Support means using any and every system at hand. When ever system left for this year's opening grand prix at Melbourne, for example, it was found that some key software had been left behind at Silverstone. HP located it, compressed the data into an e-mail and sent it via the Internet into a team laptop. A small

example of the meaning of partnership, Banks points out, but nevertheless a pertinent one.

Joint planning with the team is rigorous: "With any company you've got to know where you're going to be, but F1 is moving goal-posts all the time, so you have to update all the time."

Electronic cash at the Olympics

Visa International (Internet address: http://www.visa.com), a worldwide sponsor of the Olympic Games, has chosen the event to launch the largest trial of electronic cash in north America.

"We can test the technology and 'showcase' it to four million consumers visiting the event from around the world," explains Stephen Schapp, Visa's executive vice president for products and marketing.

Electronic cash uses a plastic smart card with an embedded microprocessor capable of executing transactions and storing balances. "VISA Cash" cards will be available in \$10, \$20, \$50 and \$100 denominations from First Union Corporation, NationsBank and Wachovia, the participating banks, where they can be also replenished. They can also be purchased from card-dispensing machines in banks, shopping centres and some merchants. VISA Cash will be accepted for purchase of food and beverages at the main stadium venues and the Olympic Village.

Milestone in the history of money

Visa chooses the Olympics to launch a large trial of its electronic cash systems

city area's fast food outlets, gasoline stations, convenience stores, cinemas and railway stations.

Users insert the card into a terminal which displays the balance, then the customer confirms the amount of the transaction by pressing a button and the cash is transferred. The new balance is then displayed. Electronic cash offers advantages in speed of transaction and the ease of carrying value. For businesses, it offers a dramatic reduction in the cost of handling cash, which is estimated at \$4.5bn a year in the UK alone.

The trial continues in Atlanta after the Olympic games. Other trials of VISA Cash are proceeding in Argentina, Canada, Columbia and Australia's Gold Coast. Spain is the closest to commencing a national roll-out of VISA Cash. The system complies with an international standard agreed

with MasterCard and Europay. A large-scale pilot of Mondex, NatWest's equivalent technology, has been running in Swindon and is due to be extended throughout the UK in 1997.

"This is a milestone in the history of money," says Schapp. "We have been using coins for thousands of years, but we now have the technology to replace it with electronic stored value. This trial is the first step towards implementation a relationship card, which will give users worldwide secure and portable access to a full range of financial and payment services."

The microchip in the card will allow the user to carry out credit transactions, make debit payments, store value with electronic cash, provide the ability to carry out secure transactions on the Internet, provide electronic banking and allow users to replenish their electronic cash, he says.

Advertisement for Sportster 28,800 PCMCIA fax/data modem with XJACK. Includes text: 'FREE! APPLE MACINTOSH COMPATIBLE SOFTWARE AVAILABLE', 'REDUCED PRICE! NOW ONLY £199 INC. VAT', and 'U.S. Robotics FREEPHONE 0800 22 52 52'.

Advertisement for Sportster PCMCIA Modem. Includes text: 'PLEASE SEND ME FURTHER INFORMATION ON THE SPORTSTER 28,800 PCMCIA FAX/DATA MODEM WITH XJACK', and a form for requesting information with fields for name, title, address, and telephone number.

Network-centric computing

■ Prospects for network computers • By Louise Kehoe

The NC debate intensifies

Larry Ellison, chairman of Oracle, has touched a raw nerve in the personal computer industry with his charges that the ubiquitous desktop computers are too expensive and too complex to use

The era of the personal computer "is almost over and the era of the network computer is about to begin," says Larry Ellison, chairman and chief executive of Oracle and the chief promoter of the "NC," as he calls it.

Predicting the advent of a new information technology "megatrend", Mr Ellison has captured the attention of the computer and software industries as well as millions of computer users worldwide with his promise of \$500 computers.

When Mr Ellison began his NC campaign last year, prominent leaders of the PC industry scoffed. Bill Gates, chairman of Microsoft, called the NC "a stupid idea" that would "never happen". Michael Dell, Dell Computer chief executive, referred to it as a "back to the future" concept, implying that it turned back the clock to the days of centralised mainframe computer systems.

Over the past six months, however, Mr Ellison has wooed NC supporters from the software, consumer electronics and computer industries. Last month, at an NC rally in San Francisco, more than 50 companies including Apple Computer, International Business Machines, Netscape Communications and Sun Microsystems endorsed NC standards.

At the heart of the debate over NCs - also known as net-

work appliances, thin clients or network terminals - are contrasting views of the future role of the Internet and private corporate "intranets".

While there is broad agreement that Internet standards, which enable computers of all sorts to communicate and share data, represent a sea-change in information technology, the industry is divided over what this will mean for individual computer users and how quickly change may occur.

Competitive interests

Fueling the debate are the competitive interests of some of the world's largest software and computer companies. There is nothing that Mr Ellison would like to see more than to have arch-rival Microsoft lose its grip on the personal computing software market.

Similarly, it is to the benefit of companies such as Netscape and Sun Microsystems - the largest providers of Internet software and servers - to promote the use of the Internet.

In contrast, Microsoft and companies such as Compaq Computer that have flourished in the PC market clearly have a vested interest in preserving the status quo.

Mr Ellison maintains that



Directions

Business strategies for the network-centric computing era



Ellison: champion of the network computer

the Internet and intranets are about to spawn a radical change that turns the concept of a PC on its head. Instead of putting computer power and numerous application programs on every desk, the NC minimises the desktop unit and relies heavily upon the power of network "servers" - larger computers that store data and software and service the needs of all users linked to a network.

In the corporate setting, the NC could be linked to an office local area network. For the computer at home, the NC would be hooked up to the Internet.

PCs are too expensive and complex, Mr Ellison maintains. With the NC, he says, "the complexity is moved out of the appliance and back into the

networks." He draws an analogy with television cable networks and telephone networks which are "enormously complex, but the devices that bring these services to individuals are inexpensive and easy to use".

He has demonstrated prototype NCs built for less than \$300 and he promises that NCs selling for only about \$500 will be widely available before the end of this year. While he does not see NCs replacing PCs, he predicts that NC sales will outstrip those of PCs by the end of the decade.

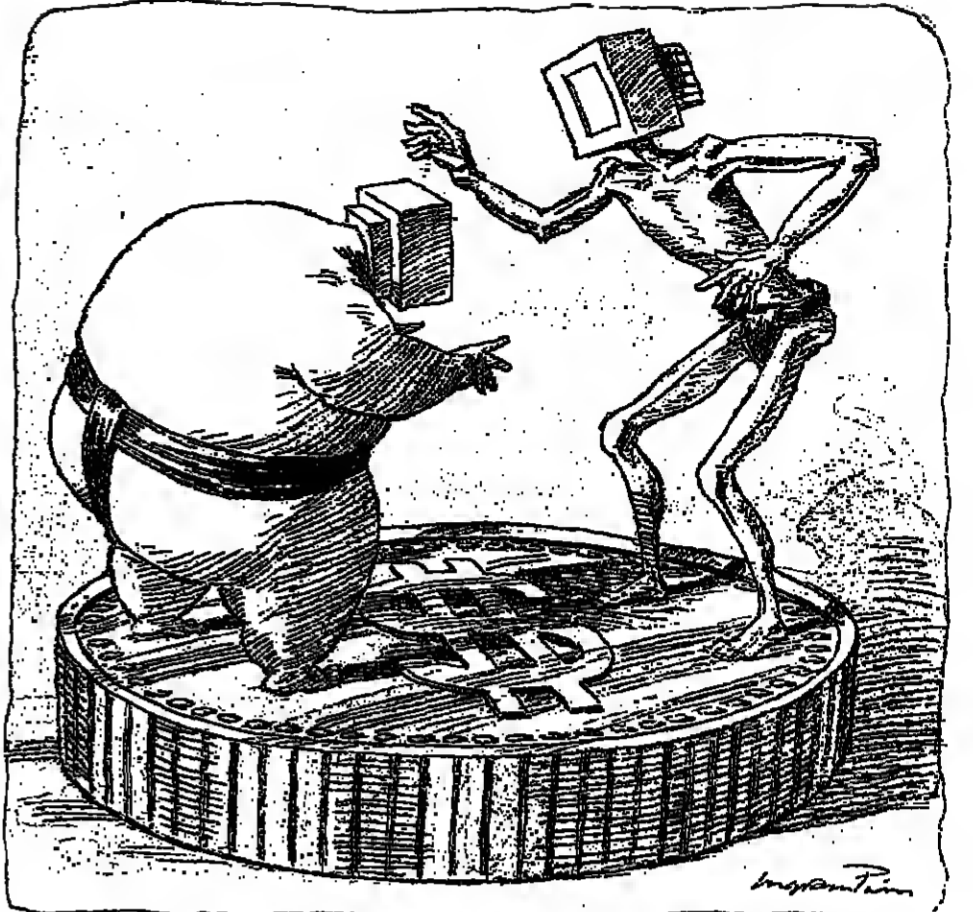
From Mr Gates perspective, however, the Internet and corporate networks are facilities that extend the capabilities of PCs, rather than displace them.

"Microsoft will embrace and

extend standards and technologies coming out of the Internet and provide great implementations for the PC and (Apple) Macintosh," he says.

Mr Gates argues, moreover, that NCs have two significant drawbacks. First, he points out, NCs will not run the plethora of PC software that is in use today. "The world has more than 150m users of Windows, and there are 5m people developing Windows software... Microsoft's strategy rewards, rather than discards, the investments these people and companies have made."

Secondly, he argues that NCs will require broadband networks in order to access programs and data stored on remote servers at an acceptable speed. "The machines may find a place in the corporate



The struggle to cut costs: new slim-line and easy-to-use "network computers" - also known as network appliances, thin clients or network terminals - will sharply reduce the "cost of ownership" of a desktop computer in the corporate arena, claim the NC's ardent supporters

marketplace, where intranets are becoming vital and broadband networks are fairly common," he concedes.

However, network terminals "will find less acceptance in homes, where narrowband and midband connections (such as ISDN and cable modems) to the Internet will be the rule for several years," Mr Gates says. Even some of the avowed

supporters of the NC agree in part with Mr Gates' assessment. IBM, for example, is focusing its initial NC efforts at the business marketplace, rather than consumers.

"We are absolutely certain there is a place for NCs in business. We suspect that the consumer market will develop, more slowly," says Phil Hester, general manager of IBM's Inte-

grated Product Solutions group.

In the corporate arena, one of the main attractions of the NC will be that it sharply reduces the "cost of ownership" of a desktop computer, says Mr Hester. According to industry studies, PCs linked to office networks cost as much as \$12,000 a year to maintain, support and upgrade. NCs could cut this cost by 25 per cent or more, IBM believes.

Similarly, SunRiver the world's second largest manufacturer of computer terminals, aims to become a leading producer of NCs. But the company has "no interest in the consumer market," says Gerald Youngblood, chairman and chief executive. SunRiver will include a Windows NT-compatible version of the NC in its range of new products, says Mr Youngblood, because the company believes many businesses will want to keep using existing PC applications software.

■ Network computers in the corporate environment • By Rod Newing

Kick away those support costs

Network computers may offer corporate users a big cut in the cost of ownership compared with personal computers

According to research by the Gartner Group, the lifetime cost of ownership of a personal computer in the business environment can be as high as \$10,000.

IBM and Sun, two manufacturers who are working hard to produce network computers, are therefore targeting the ongoing cost of supporting a desktop computer over its lifetime to produce a competitive advantage over personal computers.

The network computer (NC) is designed to be as simple as possible, with no hard disk, CD-ROM or floppy disk drive. The essential components of a network computer are well proven and reliable, including processor, motherboard, memory, network card, monitor, keyboard and mouse.

However, the real cost-saving lies in the lack of local software. Sun's JavaStation has no operating system, downloading instead a Java "virtual machine", which is a compact piece of software code. A virtual machine can be written to support a device from any manufacturer. In the case of IBM, researchers are experimenting with several different operating systems, but they believe that users are not bothered about which system they have.

The user downloads a browser which allows them to connect to whatever software and data they need. This is likely to be a client for a

full-blown business application, which will have moved as much functionality back to the server as possible, leaving a "thin client". It could also connect to a front end to a legacy system.

The software is loaded into the memory by downloading from the network each time the device is used. This means that administrators can manage software distribution centrally and users will automatically have the latest version of the software. Because there is no floppy disk or CD-ROM drive, security and back-up is handled centrally by the network, further reducing support costs.

Sun are developing eight devices at present. The machine aimed at the corporate market is called the "JavaStation" and will be available later this year, although no firm date has been announced. The prototype shown to the press was fitted inside an external disc drive box, the size of a large novel, but was taking up about half the space inside.

The JavaStation will sell for \$750-1,500, including a monitor, against a typical PC at \$2,000. However, Sun are claiming "near zero" administration costs - "the JavaStation reduces support costs, provides more security, reduces the cost per seat and distributes applications automatically," says Martyn Lambert, the director



Rod Newing test-drives a prototype of the Sun JavaStation - the small box in the foreground - which is aimed at the corporate market

of Sun's new Networking Business Unit.

IBM has investigated 15 possible network computer devices and has narrowed its choices down to seven. These include at least two for use in a corporate environment. One of these is designed to reduce space on the desktop by incorporating the computer into the monitor casing. A number of prototypes of this design have already been sold to a leading corporate customer.

IBM are emphasising the ease of use of a network computer when compared with a PC - "IBM is in the information business, not the hardware business," says Ozzie Osborne, vice president of

systems strategy at IBM. "We will provide hassle-free computing, because people just want to use it. We mean that the user can take it out of the box, install it and use it without support from the IS department. We can save 25-30 per cent of the cost of ownership because in a network-centric environment, clients are easier to manage and more cost-effective. Reducing the lifetime cost is key priority to large corporate customers."

"We are at the start of a major change in platform, from 386/486 to Pentium or Pentium Pro and from 16 bit to 32 bit software. Network computers will give corporates a competitive edge when they make this

■ NC development • By Paul Taylor

Advent of the Acorn NetSurfer

The network computer has provided Acorn with a coherent strategy, based on the network concept, and raised the group's worldwide profile

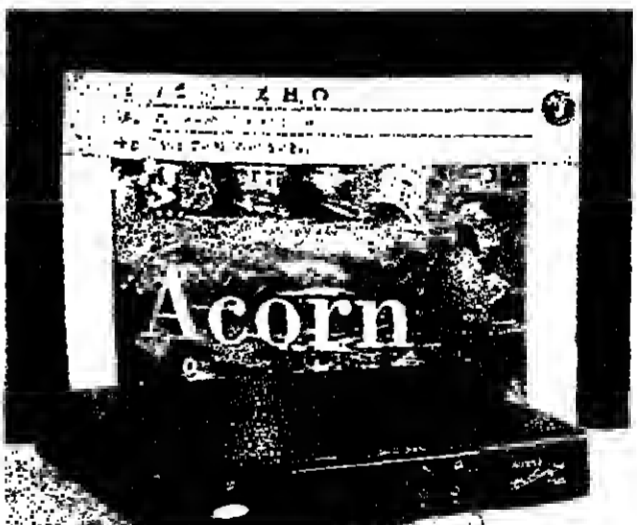
Although the impetus for the development of network computers came from Mr Larry Ellison, chairman of Oracle, much of the design and development work has been undertaken in the UK by a handful of small technology companies including Cambridge-based Acorn Computer and Eidos, the video technology specialist.

Acorn, which won a contract in January from Oracle to design a family of network

computers, including desktop and portable models, plans to become one of the first companies to sell a network computer while Eidos has agreed to provide video compression technology for Oracle's own device, the Oracle Network Computer.

The Eidos' video compression technology, which will be made available to all NC developers, is expected to form part

Continued on page 9



Quick to market: Acorn Computer's Internet device, due out this autumn, is likely to cost less than \$500

Challenge for NC manufacturers

Most NCs, however, are expected to run applications written in Sun Microsystems' Java programming language and stored on network servers. A significant challenge for NC manufacturers, therefore, will be to encourage the development of Java application programs that mimic the functions and appearance of popular PC programs.

Supporters of the NC may be promising too much, too soon, industry analysis warn. It will take time for NC software to be developed for the business market, and still longer for high-bandwidth networks to reach consumers' homes in most parts of the world.

Nonetheless, Mr Ellison has touched a raw nerve in the PC industry with his charges that the ubiquitous desktop computers are too expensive and too complex to use. Already, the threat of competition from NCs is spurring efforts to develop lower-cost and easier-to-use PCs.

Larry Ellison will be bring a keynote address at this Friday's London symposium on the future of desktop computing; see details on page 10

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By Steve Thomp
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L i b e r a t i o n S y s t e m s f o r E n t e r p r i s e A c c o u n t i n g



Network-centric computing

Guest column • Philip Crawford on the future of the Network Computer

Is this revenge on the nerds?

'The Network Computer represents the best chance of making computing available to everyone, both in the home and in business'

Does computer technology frighten you? Are you bewildered by the jargon and acronyms that seem to drop so easily from the lips of so-called 'techies'?

Even more importantly, do the life-cycle costs including software upgrades blow your mind?

The chances are that, for most people outside of the computer industry (and probably for a fair few people within it) the honest, and perhaps unpalatable, answer is yes.

But why do these fears exist? Surely computer technology is there to help us by making our lives easier, as well as making us far more productive and

efficient at our jobs?

Well, it should do, but the reality is that far too often it does not achieve this - and this is simply because, in my view, too many chief executives among computer manufacturers have forgotten what their users want from technology.

Brought up in the darkened room of the development lab, they are often in love with technology per se to such an extent that they simply want their users to feel the same sense of wonder and admiration. Well, wake up to the real world: not everyone has the same level of obsession!

Forgive me if I am wrong, but most PC users do not (and should not) care about how many lines of code went into their latest piece of software.

Instead, users want to be assured that they can set up and operate their PC without wading through manuals the size of an encyclopaedia. They also want their PC to be cheap to buy and cheap to run. However, for too many high-ranking computer executives, such thinking is anathema.

Where is the proof of this techno-fear? Consider the example of the humble video recorder. I remember when VCRs were first marketed as an affordable commodity item, enormously complex and resplendent with rows and rows of function buttons, they were touted as a high-tech 'must-have'.

But this was not what users wanted. Left befuddled by the sheer complexity of the machines, most owners had to admit, rather shamefacedly, that they did not have a clue how to operate their VCR.

What has been the result of this consumer reaction? VCR manufacturers have changed tack dramatically and video recorders have quickly appeared on the market with only the essential function hints, such as play, record and stop.

With research demonstrating that the market for home purchases of PCs has slowed down dramatically and that many office users of PCs only use perhaps 10 per cent of the functionality of their machines, the argument that the PC is too difficult to use for many people is a strong one.

There is clearly a lesson here for the computer industry to learn: if it wants to make computing truly pervasive in society, then it has to follow the lead of the VCR manufacturers.

But is the computer industry ready for such a shift in attitude? Apart from the odd Luddite with a vested interest in preserving the status quo, I believe it is willing - and my evidence for this lies in the

industry's rapid acceptance of the Network Computer.

To briefly recap, if you have not already come across it, the Network Computer redefines what a computer should be: small, inexpensive, easy to use, and without the complexity and cost associated with today's PCs.

The concept behind the NC is that it is a device that is as easy to buy and set up as a telephone and which can perform simple tasks such as accessing the Internet, word processing, accessing spreadsheets and e-mail efficiently and cost effectively. And it is the concept that is important because inherent in the thinking behind the NC is the recognition that computing has to be both easy and cheap.

Cost is fundamentally important to the idea of the NC because, as well as the fact that PCs are too difficult to use, many consumers simply cannot afford to buy PCs which retail at an average cost of more than £1,000.

Costing around £300, the NC is priced at an acceptable commodity level and at a price point which will persuade consumers to jump on the computing bandwagon. It is not just consumers who win at the cost of today's PCs and who are ready for a cheaper alternative: boards of directors of many companies must tear their hair out at the cost of maintaining and growing their PC infrastructure.

A small number of sceptics in the computer industry have been quick to deride the idea of the Network Computer and have put barriers in the way of its take-up. Claims that communications infrastructures are not in place to support such a device are amongst the more common arguments against the NC.

However, such arguments are irrelevant because, as with any new technology, business and consumer demand will drive the market to come up with solutions to problems. In fact, the pace of growth in network bandwidth is significantly in excess of the pace of growth in chip technology.

When Alexander Graham Bell invented the telephone, I am sure many people suggested it could never be widely used because the communications infrastructure was not in place to support it. They were wrong then, just as NC critics are wrong now. Evidently, the barriers to the NCs adoption have been greatly exaggerated. Solutions to issues, such as communications infrastructures, are not far away.



Philip Crawford: 'The Network Computer redefines what a computer should be'

The future of the personal computer

Big moves to make PCs more user-friendly

New-style PCs will be able to use a TV or computer monitor and control a wide range of consumer electronics devices, reports Tom Foremski

Future PCs will offer more of what they already offer: more memory, supercomputer performance in a match box, stunning displays, and they will respond marvellously to voice commands and hand-written input. Such predictions are easy to extrapolate from the current steep rate of progress in PC technology, but are not very useful.

Looking at the immediate future, one to two years ahead, it is possible to build a reasonably clear picture of the future PC and its uses. For example, by this time next year, the PC market will be more segmented with special PC systems for specific uses. The division between the home and business PCs will be much more pronounced. And the popularity of the Internet and corporate intranets, will give rise to a range of mobile and desktop PCs for Internet applications.

Boot-up time

Some of the new technologies that will appear in the PC of 1997, were discussed at the recent Windows Engineering Hardware conference at San Jose, California.

These included technologies such as OnNow, which eliminates the long boot-up time for PCs and is part of the Microsoft and Intel sponsored Advanced Configuration and Power Interface (ACPI) technology that manages power use by all types of PC, not just portable computers.

"Users are demanding that PCs become more convenient to access and use in the home and the office," says Jim Allchin, senior vice president of the desktop and business systems division at Microsoft. "They want their PC to be instantly available to answer the phone, display new e-mail,

browse the Internet or run an application. Consumers don't want devices that take a long time to warm up or that use unnecessary energy."

OnNow and ACPI are part of Microsoft's efforts to make the PC much more consumer-friendly - and hopefully find new markets among a large number of potential customers who are not computer literate and need not be to use the new class of computers. Microsoft calls the future PC design, the Simply Interactive Personal Computer (SIPC).

SIPC-based systems will be able to use a TV or computer monitor, and will be able to control a wide range of consumer electronics devices such as TVs, VCRs, stereo systems, Digital Video Disk players, cable modems and heating and security systems. Speaking at the conference, Microsoft chairman Bill Gates said the goal is to create a PC appliance that is easy to turn on and use.

"We would like to make it as easy as just plugging in a disk to watch a movie, listen to music, even have the PC keep track of what your favourite movies are," said Gates.

He added that the PC needs to be made much more user-friendly if it is to be accepted by all types of users in a wide variety of uses.

"You're not going to go to your PC to look up a new fact or find out about movies if you're sitting there watching that memory test program run. I don't think there's anything quite as antiquated as that memory test that comes up or those kind of ugly BIOS messages that we all see. Those have just got to go away," Gates said.

SIPC designs will lead to sealed case designs with no options for users to add mem-

Continued on next page

The Acorn NetSurfer 'The fourth wave of computing'

Continued from page 7

of the advanced video software architecture for the NC.

"With the Oracle licence in place, Eidos is creating a platform-wide de facto industry standard for software-based videophones for use over the World Wide Web," said Mr Stephen Streater of Eidos.

Acorn has dubbed its own offering - due out this autumn - the Acorn NetSurfer. The machine, demonstrated in London for the first time a few weeks ago, is expected to be manufactured locally under contract and will cost less than \$500.

The group expects to sell the machines initially to corporate customers such as retailers and financial service companies and to the education market through its Xemplar Education joint venture with Apple Computer.

Acorn's management emphasises that they are able to bring the NetSurfer to market quickly by capitalising on the

semiconductor design work done by a sister company, Advanced BISC Machines, in which both Acorn and Apple Computer have 43 per cent stakes.

Arm has developed the low-cost, low power consumption microprocessors which have been used in the Apple Newton and its interactive TV devices - set-top boxes - such as those being used in the Cambridge trial where participants already have access to the World Wide Web through their TV sets.

Two of these microprocessors, the ARM7500FE and the new high performance SuperArm processor, developed jointly with Digital Equipment, are expected to power the first generation of NCs.

Interactive television set-top boxes share a number of similarities with the NC concept, for example both are designed to use an ordinary television as a primary display and include

special "anti-twitter" and "anti-aliased" font display techniques to make text more readable on TV sets.

They are also both designed to be networked devices and do not depend on expensive local data storage devices which helps simplify the design.

"For years, Acorn has been focusing its efforts on making the benefits of computing technology more widely accessible," said Mr Malcolm Bird, chief executive of Acorn's new network computing division.

"The whole industry has been slowly heading in this direction, and finally we are entering the fourth wave of computing. We have gone from the mainframe to the minicomputer to the PC and now the NC, with each wave costing less, being easier to use and offering access to more and more people."

Aside from manufacturing the devices themselves Acorn, which has invested heavily in Risc architecture through ARM, and its broadband multimedia

through its Online Media subsidiary, should benefit in a number of ways from the advent of the new computing devices.

Mr David Lee, Acorn's chief executive, points out that the Oracle design contract has helped fund the group's 50-to-60 strong research team for a year. In addition, Acorn may be able to look forward to a portion of the \$10 to \$15 licence fee Oracle will receive for each NC built using its specification and should benefit indirectly from sales of ARM chips manufactured by licensees.

But perhaps just as important is the fact that the network computer has provided Acorn with a coherent strategy based on the network concept and raised the group's worldwide profile.

Acorn's home page on the World Wide Web is: <http://www.acorn.co.uk/>

IT stockwatch: focus on network-centric computing - see page 24

Advertisement for Compaq Deskpro PCs featuring 'YOU CAN KEEP TABS ON EVERY COMPAQ DESKPRO IN THE BUILDING FROM HERE' and a coupon for AssetControl software.

View from the top • Paul Taylor interviews David Garrison of Netcom

Radical changes in PC usage

The PC has moved from being a desktop island to become a communications tool, says David Garrison, chairman of Netcom, the leading US-based independent Internet service-provider. The Net, he argues, is the catalyst for a sociological revolution

says Garrison, is information "content".

"The amount of content, and the rate at which it is being added to the Internet, surpasses any other content aggregation we have seen in history."

It is not just content in the hands of a few who have traditionally controlled content, but this is a very broad-based "content revolution" where people can create their own home pages and participate in the creation of content.

"Much of this will not be of interest to the masses, but the fact is that in this enormous content almost every special need or interest group can be satisfied and it is truly allowing new kinds of communities to be created."

For example, he points out, "If you live in a town or a village in the countryside and you suffer from a rare disease, you are really disadvantaged because you have no access and your doctor probably doesn't have much 'exposure' to it. With the Internet you can not only connect with other people who suffer from the disease, you can do your own medical research online in order to have intelligent questions to ask of your doctor."

Understandably, Garrison is also an enthusiast about the opportunities which he believes the Internet offers

"Therefore what we have done is created a community of people that otherwise would have no bond - we have created communities of interest."

The Internet, he argues, is the catalyst for a sociological revolution.

The third significant change is the emergence of easy-to-use tools which bring together the content with the communications device. "The most obvious one is the browser, but there will be others as well. The browser in and of itself is

'The increasing amount of information on the Internet surpasses any other content aggregation in history'

a baseline entry point, but I think we are just on the dawn of seeing the applications programmes, the equivalent of the spreadsheets and word-processing programmes that will really allow people to benefit from the vast content on the Net and to use it in ways that are meaningful to them."

uses of the Internet will co-exist.

"In our experience, our customers are 'mixed-use professionals', nearly three-quarters of the customers in the US and Canada are customers that use the Net for both productivity and information," he says.

They use the Internet to learn about their competitors, to do research on new products and to learn about marketplaces. But they also use the Internet to do research on hobbies, to understand research in order to get the best deal and to learn about products.

"It is not that we think that the Internet as a shopping medium is going to replace Sears," says Garrison, "I see it as an enabling tool for people to be much smarter shoppers."

In terms of revenues, Garrison sees the Internet continuing to be supported by a mixture of advertising and paid-for services - matching the model in other media. In the US, he points out, television viewers either pay by purchasing goods advertised on television, or by paying a subscription to a cable provider.

"In the US, the average household is spending over \$100 a month on television, but they are not writing a cheque for that, they are buying products that are advertised on TV or they are subscribing to cable television."

"I don't think people will sign onto the Net and pay a dollar or \$5 every time they want to access information; I don't think that is a reasonable thing because you don't know what it is you are paying for," he says.

Nevertheless, he does think that "tiered services" or "prior-

ity channels" for business traffic could emerge.

"I think we will see this over time," he says. "It largely depends on how complex the traffic gets and the rate of acceleration of video and audio, we are technically capable of doing it today."

However, just what form of tariff structure might appear remains unclear - "It could be you will pay a higher amount for priority service, it could also be that all people get a priority service but you will get a discount for slower service; it could be time of day, it's too early to tell. In this business, we can be certain that it will change."

Garrison also has strong views on regulation of the Internet: "We tend to agree with the view that the Internet is by definition an international product and no one country is in a position to control the content of the service, although we will certainly respect any nation's laws regarding the Internet - our system is designed so we can offer a different service in each country in which we operate - we want to be very sensitive and responsible and responsive to the laws."

"At the same time, we think it is about individual responsibility; we think it is about individual freedom and individual choice. We will offer tools such as 'Surf Watch' to our subscribers so they can screen-out certain types of content that they might find offensive for children, but I think you can find offensive content on the high street, too, if you know where to look."

"You can find offensive content in print, on satellite television and video tapes and you can find it on the Internet, but as a percentage of content I am told it's less than one percent, so it is not what the Internet is about; it happens to be a by-product of what is there."

He also acknowledges that the Internet faces other challenges as it evolves, not least ensuring that the infrastructure keeps pace with demand so that traffic does not slow to a crawl. Already, he notes that many people accessing the Internet through online services, experience service degradation because of network architectures and congested servers.

The other bottleneck tends to occur at the actual content owner's site, where they have not provided sufficient capacity, he says. "We have found that many times that is the

culprit - and that is not related to any one carrier, but it is related to the demand on a very 'hot' site. That problem will continue as we grow, just because of increased capacity, as more users come on, you have to increase your bandwidth capacity."

However, for Netcom corporate customers, Garrison says that security issues remain the main concern: "They want confidential information has been distributed through the Net, but by definition an open network such as Net is going to have security issues, just like the postal service the credit card system and other facilities."

He also acknowledges that by providing a gateway through to its internal systems, a company is opening itself up to fraud. But he adds: "In our experience most of the hackers tend to be well-educated, relatively affluent - and they hack for the challenge of it. Most of them don't have a criminal intent. It's much like saying in the early days of television or radio you had 'static' problems - it's part of the growth of the business."

Netcom's business customers also want to know how to build intranets and to connect up disparate corporate locations: "We have corporate customers who actually don't want to access the Internet, they just want to use our intranet services," says Garrison.

But in the fast-moving Internet industry, Garrison says one fact is certain: "The Internet is defined by change. What it is today is not what it will be in two years' time."



David Garrison: "There are enormous opportunities for business users"

MARKET REP

Bid

By Steve Thom

UK Stock Market

A much more evident in London the close yesterday of the potential rise activity, counter-move by BBA, but other rumour especially in general sector.

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On April 10, Netcom passed another milestone as its subscriber base moved through the 400,000 level. Since then, the company has established operations in the fast-growing UK market - the latest in a string of US service-providers to look to Britain for further growth.

For David Garrison, Netcom's chairman and chief executive, the events of the past two months cap a dramatic first year in the job, during which the group's revenues nearly quadrupled to \$53.4m and its subscriber base grew by more than 300 per cent.

"I think a couple of sea changes are occurring simultaneously which are leading us to a very fundamental change in the way people use computers and the way people will access content of all different

types," says Mr Garrison whose background, before joining Netcom, included being president of SkyTel, a division of Mobile Telecommunications, and a spell as general manager of the Providence Journal, a publishing and broadcast holding company based in Providence, Rhode Island.

"The PC has become a communications medium," he says pointing out that well over half the new PCs being shipped are now equipped with modems - "and not just modems, but reasonably high-speed modems."

"The PC has moved from being a desktop island to being a communications tool," he says, "we think that is as significant a sea change as the introduction of spreadsheets and word-processing programmes for the personal computer."

The second requirement,

Preview: InterForum 96



Sir Peter Bonfield, chief executive of BT, will deliver an opening keynote address at InterForum 96

This Friday, June 7, a European audience of directors and senior personnel from the IT-user community will hear an impressive line-up of speakers taking part in InterForum 96 in London when the theme will be "The future of the desktop - business strategies for the network-centric computing era."

Sir Peter Bonfield, chief executive of British Telecom and chairman of ICL, will deliver the opening keynote address.

The closing address at the televised event at the Queen Elizabeth II Conference Centre, Westminster, will be given by Mr Larry Ellison, chief executive and president of Oracle, the software company. InterForum 96 marks the launch of an annual IT symposium by UniForum UK, in association with the Financial

London symposium on the future of desktop computing

Times. UniForum is a non-profit organisation with more than 1,200 members spanning the vendor, user and central government communities.

The one-day event will also address an international audience via the FT Television service which is available to TV stations worldwide.

Other speakers will include: Mr Irving Wladawsky-Berger, head of IBM's Internet division, Mr Philip White, chief executive and president of Informix Software, Mr Keith Todd, chief executive of ICL, Mr Javald Aziz, European

vice-president of Silicon Graphics, Mr Gene Banman, general manager of Desktop Systems Group, Sun Microsystems; Pete Higgins, Microsoft's group vice president, applications and content; and Mr Peter Martin, editor of the international edition of the Financial Times.

For more details of the event, contact Mr Philip Flaxton, executive director, UniForum UK, 9-11 EBC House, Richmond Station Buildings, Kew Road, Richmond, Surrey TW9 2NA; tel (+44) 181 332 0446; faxback (+44) 181 332 0448.

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Future PCs Systems will offer high speed graphics and larger memories

Continued from previous page:

ory of add-on cards. Instead, upgrades will be made by connecting peripheral units. The first SIPC systems should appear in the second half of 1997.

While SIPC is aimed mostly at changing the design of home computers, there are changes under way for business computers. Intel, for example, is proposing a new way of displaying three-dimensional graphic images that offers a much faster performance.

Intel calls its technology the Accelerated Graphics Port (AGP), a new type of graphics bus technology that can transport graphics data within the PC at speeds as high as 200 Mbytes per second, double the 100 Mbyte per second rate offered by the 33 MHz PCI bus found in PCs.

The high bandwidth of AGP is necessary for PCs displaying high resolution 3-D graphics for business and entertainment applications. AGP was designed in co-operation with leading graphics accelerator companies; Intel says it is offering the AGP specifications free in order to encourage the creation of an industry standard.

Another change is a move toward a Unified Memory Architecture (UMA). Instead of having separate memory chips to handle video graphics, there is a move to let the main system memory handle the video graphics. This arrangement could help cut the price of PCs, since memory chips are now being sold in larger packages, which means that to have a separate video memory in a PC, it would have to be larger and thus represent a larger cost of the system.

Other computers such as Apple Computer's Macintosh computers use UMA-type designs, but so far, Microsoft has been resisting UMA designs because it believes that system performance could drop by as much as 40 per cent when running Windows 95 on

an 8 megabyte system.

UMA supporters say that in the long run, UMA will be a standard part of the PC architecture, and that cheaper memory will mean that personal computers next year will come standard with 12 or 16 megabytes of memory, which should overcome Microsoft's objections.

Tony Tong, senior product marketing engineer at chip maker 3D, which just began shipping an UMA chip set says that an UMA system will probably have a much smaller performance loss. "We've been



Bill Gates, Microsoft chairman: "I don't think there's anything quite as antiquated as the PC memory test-program"

able to show Microsoft that an UMA system with 8MB of DRAM would probably only suffer a 10 per cent performance penalty."

Mark Kirstein, senior industry analyst at US market research firm In-Stat, says: "The majority of UMA systems this year will ship in European and other markets rather than North America."

Kirstein predicts that while UMA will get off to a relatively slow start this year, accounting for about 6 per cent of PC shipments, by 1998 UMA-based PCs could account for at least 50 per cent of the market.

CeBIT Home Electronics Fair New European show for consumer electronics

Seven hundred companies in the areas of personal computing, consumer electronics, media technology, telephony, software and online services will be exhibiting at the first-ever CeBIT Home Electronics Fair in Hannover from Wednesday, August 28 to Sunday, September 1, writes Michael Wilshire.

The five-day fair will be targeting distributors, resellers, purchasing co-operatives, small office/home office users and private consumers.

The event is timed to take advantage of the pre-Christmas ordering period for dealers at the end of August, allowing time for production in September and shipments in October and November.

Symposium

Alongside the fair will be an international symposium called "Learning for the Future", with demonstrations in a multimedia arena by suppliers of products and services, highlighting new ways of teaching, training and interactive learning with

IT. Other events include a forum for retailers, display areas for IT users in schools and universities, presentations on the information society, digital video systems, computer graphics, high fidelity and surround sound, big screen TV, virtual reality, telebanking, home automation and a "Games City" with extensive hands-on facilities for visitors. In addition to themed displays, the fair will include modern and classical music concerts.

For more information: tel: Hannover on (0511) 830; fax (0511) 831-23; 836 000; Internet address: <http://www.messe.de>

The next issue of the FT-IT Review (Wednesday, July 3) will include themes on multimedia and education, with details of innovative products being launched at CeBIT Home in August.

For more details of the July issue, plus the fax-u-back service, see the information panel on page two of this Review.

The UK fax-u-back number is 0990 208 903; outside the UK the number is 41990 208 903.

Preview: Tech-Ed 96 in Nice Europe's largest technical conference

The future of the personal computer - as seen by the PC software company, Microsoft - will be the main theme for more than 3,000 expected attendees at the software company's European Tech-Ed 96 conference, which will take place in Nice, southern France, between Tuesday, June 11 and Friday, June 14.

The event at Acropolis Convention Centre will feature the largest range of Internet and Intranet developer technologies yet seen in Europe. There will also be previews of new software tools and products, including new versions of

Visual Basic, Visual C++, Visual FoxPro and the Microsoft Office - all on show for the first time in Europe.

The event will also feature the company's Java development tool, code-named Jakarta, as well as the new ActiveX client and server framework. The four-day conference will feature 200 English-language technical sessions, with a dedicated stream of more than 30 key sessions delivered in French.

Details of the event are available in the UK on tel 0800-83445 or via Microsoft's home page at <http://www.microsoft.com/showcase/teched/>



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News Briefs: Internet solutions for businesses and other organizations

The Paris Pages: a very popular Web site for travelers who want illuminating information about the City of Lights. IBM provides hosting support for the site's 7,000-plus pages which feature descriptions of major monuments, museums and attractions, as well as the latest weather satellite images plus train, bus and Metro routes. All this, to-gather with access to details on shopping, 1,600 hotels, 600 restaurants, airports and exhaustive events calendars. Visit Paris on the Web at <http://www.paris.org/>

Copenhagen City Council is putting open government into action through the Internet. In the largest project of its kind in Europe, IBM has designed a solution that allows Copenhagen's citizens to access more than 2,000 pages of information via the Council's home page on the World Wide Web. Kiosks located in libraries and other public buildings provide access to information such as Council meeting minutes and agendas, thereby allowing citizens to review and democratically influence the decisions made by Council members.

Livia Insurance in Sweden markets its complex pension products in a way that is easy to understand. Customers fill in online forms to have their pensions automatically calculated and graphically displayed on the server home page. Livia is the first commercial insurance company to use such interactive techniques and has received widespread positive feedback from its customers. Livia's home page is at <http://www.livia.se>

Holiday Inn Worldwide and IBM are working together to refine and fully integrate the global hotel chain's newly acquired reservation and property management system. The system will provide Holiday Inn with a networked database linking the hotel's central reservation system with its property management system. The result will be a system that provides a single view of the chain's worldwide inventory of available rooms as well as customer profile information—thus improving the company's ability to maximize occupancy and deliver superior customer service. This initiative helps various segments of the worldwide travel industry improve efficiencies, reduce costs and increase the level of customer information in order to be better positioned for the future. IBM's Travel and Transportation Industry home page is <http://europe.ibm.com/travel>

Originally developed to help IBM's customers and employees communicate, share information and access worldwide databases, the IBM Global Network today serves 30,000 businesses and government agencies. IBM's network provides integrated data, voice and video services with access in 850 cities in more than 100 countries. The IBM Global Network is connected to the Internet and 35 other international networks, and manages thousands of local area networks.

GAZPROM, Russia's natural gas conglomerate and its Russian Natural Gas Research Institute, VNIIGAZ, form the leading scientific and technical hub of the gas industry in the former Soviet Union. Operating as the national information center for gas technologies VNIIGAZ is setting up a full online Internet system. The first such connection established in Russia, it is designed to provide access to state-of-the-art solutions, specialist networks, the latest international trends and key technology databases—all relating to the natural gas industry.

Cont'd. on Pg. II

Executive commentary: IBM's vision for the new age of the network

Dr. Irving Wladawsky-Berger, General Manager of the IBM Internet Division, talks about network computing and what it means to the customer



Dr. Irving Wladawsky-Berger

Q. Network computing seems to have emerged suddenly. Where did it come from and where do you see it going?

A. It's the logical next step in computing's evolution and is taking the traditional evolutionary path of previous technologies. The telephone, broadcasting, autos and planes all followed such a course.

The first stage is invention and limited use. Then the technology becomes more popular and finally, as it becomes more affordable it appeals to a mass market and becomes an integral part of their lives.

The computer is on the verge of being fully integrated into society, much in the way electricity is now. Today, nobody pays much attention to how electricity is generated and transmitted. We take it all for granted. In the not-very-distant future, information will simply be everywhere, as electricity is everywhere.

Q. How will access to information change the way we do business?

A. Many companies are integrating their internal operations, using Internet standards and Web browsers on private networks—or "intranets." The next logical

step is to expand this architecture using Internet technology to create an Extended Enterprise—with business data protected from unauthorized access by a "fire-wall."

This architecture provides a delivery system for transmitting content. These could be any number of constituencies: employees, trading partners, customers, shareholders, the press, security analysts, anyone a business chooses to communicate with.

In short, a business can extend its reach and add value all along the line.

Q. How is IBM working to bring the benefits of network computing to customers?

A. We're approaching the task from four directions simultaneously. First, our customers have amassed enormous volumes of information on their internal systems and we're working to open all that content and make it more accessible using the Internet. In line with that, we're enabling all our products to connect to the Internet.

Second, we're working aggressively to help the software development community create whole new classes of applications that will enable access and distribution of information, communication, collaboration and electronic

commerce.

Third, we're deploying a variety of subscription-based applications and services. These are solutions that customers can use to offer their content over IBM's Global Network thus avoiding the investment in systems and software. Users can access them from a browser and pay only for what they need.

And finally, like any company that's serious about the Internet, we're very deeply involved in research and advanced pilots.

Q. What does it take to connect a customer's own information to the World Wide Web? Is it a technological challenge?

A. It isn't so much a technological as it is an implementation issue.

The core technology already exists and we're creating the "glue" code that can be downloaded free to connect all our products to the Web. Database and transaction products like DB2 and CICS have already been enabled for the Web. And Lotus Notes, of course, already offers a

Cont'd. on Pg. III

Two powerful tools that work together: Lotus Notes and the Internet



When the Internet entered mainstream culture last year, many industry watchers predicted the beginning of the end for IBM/Lotus's flagship groupware product Lotus Notes. Notes is the software that allows computer users to access and share documents simultaneously—regardless of where they are or what platforms they're working on.

The demise was not to be. In a letter to shareholders earlier this year, IBM Chairman and CEO, Lou Gerstner, reported that more Notes installations were sold in the last half of 1995 than over the entire previous six-year life of the product.

What's more, the remarkable adoption of Internet standards appears to have propelled Notes into an enviable position as a technology ideally suited to exploit the global connectivity which the Internet represents.

While many industry watchers at first saw the potential for Internet technologies—particularly those that supported collaboration on the World Wide Web—as a threat to Lotus Notes by providing similar benefits at reduced cost, it has become increasingly clear that this is not the case.

Reliable Web sites on the Internet and so-called internally deployed intranets require sophisticated, integrated and scalable technologies that characterize the Notes server. In other words, as critical infrastructure, Web servers require the types of services that today are only found in a product such as Notes.

of Notes in the face of the Internet phenomenon was really misplaced," said Steve Sayre, Lotus' vice president of marketing. "Serious interest in the Web has led the marketplace to a much deeper understanding of the value of technologies that support communication, collaboration and coordination. Lotus is clearly best positioned to benefit from this sea change in the market's technology orientation. We are the only vendor with a fully integrated platform that is at once optimized for messaging, groupware and Internet connectivity."

The sudden popularity of the Internet was driven largely by the broad acceptance of inexpensive and "lightweight" Web browsers, which—in the context of some applications—could be viewed as an alternative to the Notes client. However, the real battle for dominance in the Internet and Intranet will be for the server. Conventional wisdom has it that Lotus clearly offers the premier Web server solution in the industry today.

Notes' services—such as document management, replication, messaging and workflow engine, integration with other databases and systems management tools—definitively set it apart from relatively bare bones Web server alternatives. It is, in effect, *sui generis* in the marketplace.

Lotus CEO Mike Zisman puts the product into perspective this way: "Our challenge at Lotus is to take all the things that Notes does and expose them to Internet and Web protocols. In contrast, competitors have to take the standard protocols and figure out how to add all the function that Notes has. Whose job do you think is tougher?"

On balance, of course, those Web alternatives along with Microsoft's most recent entrant, Exchange Server, do present a legitimate challenge to Notes—and company officials take them seriously after seven years in the market without a direct competitor. They are said to be eager to win the market battle for once and for all.

Upon the shipment of Exchange, Jeff Papows, Lotus's executive vice president and COO, was quoted as saying: "I'm tired of shadow boxing." As the company entered 1995 it expected that Exchange would be its principal, and perhaps only, direct competitor. And indeed, the product's eventual release last month did sound the bell for a long-anticipated messaging system showdown.

However, Lotus Notes has so far won every comparative review over Exchange—on the basis of its unified solution for customers seeking a robust client/server messaging and groupware platform for building and distributing custom applications that provide integration with the Internet's World Wide Web.

So far, Lotus' one-stop solution is the one to beat. Jeff Papows, again: "The sales cycle for Notes used to include a lot of missionary work explaining the benefits of communication, collaboration and coordination. All this just in order to get prospects to examine

Notes on its technical merits." "But now," he continues, "almost everyone appreciates the value of shared resources and has moved on to figure out how best to leverage these resources. Companies clearly accept the role of Notes in a Web environment—and that means opportunities for us where they didn't exist before."

Clearly, the messaging/groupware/Internet "wars" are worth following—if nothing than for academic reasons—but it may be a while before there are any definitive winners other than Notes customers.

BULLETIN: Lotus has resolved to make the Internet its focal point and capture every bit of opportunity the world's most popular network generates. At the recent Internet World Conference, the company announced the shipment of Lotus Notes: Newsstand, a complete solution for delivering business periodicals on the Web. Also previewed: Webmaster's Apprentice, a Lotus solution for creating and managing Web sites.

IBM expands horizons into mobile and wireless service

IBM recently announced a series of far-reaching service agreements with many of the world's foremost mobile and wireless computing providers.

Among those with whom IBM is now partnered are AT&T, Bell Atlantic NYNEX Mobile and GTE Mobilnet. IBM will become a preferred provider of mobile data services and solutions for the carriers.

According to industry observers, the pacts are further evidence of IBM's determination to enhance its leadership role in the emerging network computing marketplace.

In a related development, IBM also announced on the same date that it had entered into agreements with a number of leading makers of mobile computing products and applications.

The company will become a preferred services provider to a list of multinational firms that

includes Ericsson and Ractotek. Under terms of this deal, IBM will serve as a single source for product procurement, integration services and end-user support.

In a statement, James L. Seitz, general manager of IBM Availability Services, said: "Mobility is a fact of life among our customers, and within that framework they are increasingly aware of the benefits of network computing solutions.

Now we can assure them that wherever and whenever they go mobile, IBM will be there to support them."

Andrew Seybold, editor of *Outlook on Communications and Computing*, put the new developments into perspective. The industry has been stalled by complexity in putting the pieces and parts together. IBM's entry into the support infrastructure and its geographic coverage are the much-needed ingredients."

New study reveals trend to Internet computing among world companies

The Economist Intelligence Unit (EIU), in a recent study conducted with the IBM Consulting Group, reported that the convergence of telecommunications and information technology will significantly affect the way companies do much of their business in the years ahead.

"Global Telecommunications to the Year 2000: The Impact on Corporate IT Strategies," as the study was titled, comprises in-depth surveys of 120 companies in Europe, North America and Asia/Pacific supplemented by comprehensive interviews with CIOs and IT managers.

Overall, the study concluded that many companies will look to LAN/WAN technology to link their voice and data networks worldwide—and that they will fulfill more and more of their computing needs through vendors' networks.

The study notes: "The use of the Internet, perhaps today's best example of integrated telecommunications and IT technology, will grow in use from about 66 percent of companies surveyed to over 90 percent."

The convergence of telecommunications and IT technologies is a widely recognized need, according to respondents, but business has yet to fully integrate either the management or planning of the two disciplines. However, the report found that in the next five years more than four-fifths of companies will be fully integrated.

Telecommunications is increasing in importance in virtually all companies, as demonstrated by the rapid growth of voice and data traffic expected in the next five years, the EIU study said. Voice traffic is expected to grow by 20 percent in that period, while internal and external data traffic should increase by 56 and 49 percent respectively.

"Clearly, business can no longer ignore the convergence of telecommunications and IT. The study shows that many companies are starting to look for some of the benefits that network computing will deliver," said Joseph F. Movisso, General Manager of the IBM Consulting Group.

He further commented: "Fifty-two percent of the companies predict that within five years they will use the networks of various service providers for their internal-IT needs, a very surprising intra-enterprise focus."

According to the study, distributed computing is expected to grow rapidly over the next five years—from the current 60% of companies using some form of local area or wide area network to 97 percent.

IBM expands horizons into mobile and wireless service

In close conjunction with the carriers and manufacturers, IBM will move forward in a number of directions.

● Marketing integrated end-to-end mobile solutions from planning to implementation.

● Providing wireline to wireless interconnecting solutions via the IBM Global Network.

● Internet access solutions and on-line electronic services.

● Supporting a customer's contract-based cellular requirements.

● Offering customers a single source of multivendor products and support services - more than 300 hardware and 700 software solutions that embrace desktop, network, laptop, handheld, modem and wireless technologies.

...

Special IBM Supplement - Network Computing

MARKET REP Bid

By Steve Thom
UK Stock Mark

A much more evident in London the close rest of the potential rate activity, counter-move by BBA, but other rumour especially in the sector.

Lucas deal hits

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Ten "myths" about the trend to network computing

As with all new concepts, network computing is frequently misunderstood, more than a little overhyped, and often difficult to fit into everyday reality. That said, this powerful new computing paradigm stands ready to transform businesses of every kind—all across the world.

What's real about it? What's fiction? What lies in between? In this article, Stephen G. Solazzo (Vice President, Client/Server Computing, IBM Europe Middle East Africa) explores the issues of network computing.



Negroponte, of the MIT Media Lab, puts it this way: "The Internet may be the only technology development in history in which the reality exceeds the hype."

Myth 2: Network computing is difficult to get into.

The famous saying, coined by Nike, says it all: "Just Do It." What we mean is that companies can readily make the transition into network computing with the help of experts in organisations like IBM or in the consulting or academic fields.

icance on the planet that isn't thinking about piloting some network applications that could change the very nature of the way they do business.

Moral: now is the time to start the learning process. Nicholas

To be sure, training is needed on many of today's newest tools. But simple applications such as those for developing a Web site aren't beyond the competence of most companies. And they can open amazing vistas—with more than just traditional text and data, but

also high-quality graphics, video and animations.

Myth 3: Network computing is easy.

What's going on here? Well, the fact is, like Myth #2, this one is both partially correct and partially false. Sure it's relatively simple to create a home page; but, face it, it may well turn out to be a bad home page. The point is new skills are needed to move into the new world of network computing.

There are serious issues to face. How much corporate information to put up; and of what kind? Security issues. Choices among many development applications. Customer relations. How to provide facilities for making sales over the Internet? How to handle and administer the volume of "hits"?

For starters, IBM can help businesses work through all these issues. And more.

Myth 4: The Internet is useful only for communications applications.

Fact—many new applications

have capabilities that go far beyond that of simply enabling a "dialogue" across the Internet.

They have far-reaching business implications in such areas as direct marketing, customising product design, linking suppliers and manufacturers in real time, managing distribution channels, enabling personnel via wireless or mobile phones—and in providing on-demand information delivery.

Myth 5: It's the road to success.

Sorry, but many implementations of Web sites have not panned out because they weren't integrated into other corporate activities such as marketing.

The trick is focusing the whole company around the effort. Making sure every promotional item, every item of stationery, carries the home-page address. Making sure that content is updated and accurate. Making sure that hits are analysed and assembled into databases that are put to use.

Remember, an unsatisfactory

Cont'd. on Pg. IV

News Briefs (Cont'd. from Pg. I)

UNESCO and IBM have launched an effort to put the international organization's vast store of educational information on the Internet. Among other things, the project will deliver online reports to educators on global events and initiatives, create an electronic forum for decision makers in government and other organizations, give researchers interactive access to statistics and promote teaching techniques and development opportunities to educational institutions, particularly in developing countries. More than 200 megabytes of data drawn from a quarter-century of educational experience in more than 180 countries is now available at <http://www.education.unesco.org>

"The implications of network computing go on and on. It will transform every business, organization and institution in the world. Customers will have infinitely more choice in a networked world."

— Lou Gerstner

Exploration and Production (E&P) professionals in the worldwide oil industry make critical business and technical decisions based on the analysis and interpretation of a wide variety of information. Although large amounts of potentially valuable data are available, time constraints often mean that only readily accessible data are evaluated while other significant information might be overlooked. IBM has developed a solution for the worldwide oil industry called PetroBank, designed to provide E&P professionals with access to a shared online data bank. A user-friendly interface called PetroConnect assures easy access to this information via the Internet.

Bayer AG is working with IBM on a new Health Care Management project. Through the use of "smart" health-cards, patients will be able to access a network containing their personal medical records as well as worldwide databases containing information relevant to their particular needs. This solution will also enable physicians to access, over the Web, information on the latest scientific and pharmaceutical research. Material from online medical publications, libraries, teaching hospitals and research facilities will also be accessible to healthcare professionals.

MasterCard and Visa have agreed to support one of IBM's most innovative new applications: Cryptolopes. This easily implemented solution assures total and fail-safe security in financial transactions and other communications across the Internet. Cryptolopes may well become a big hit because security is what will make business move on the Internet.

Reuters NewMedia and a large group of other leading news and information providers now distribute "mission-critical" content through IBM's newly launched InfoSage online Internet subscription service. Using advanced profiling and search/retrieval technologies, InfoSage brings important benefits to business users who need convenient daily updates on a selected menu of subjects in which they have particular interest. Subscribers can receive as many as 30 stories twice daily.

UPS and Federal Express Corp. Overnight delivery companies no longer compete solely on the basis of vehicle fleets, routes or employee performance—but also, and more importantly, by making knowledge instantly available to the customer. UPS and FedEx are opening up their internal databases and putting them on the Internet so customers can personally track their own package movements around the world—24 hours a day, seven days a week, at the click of a mouse. The underlying principle behind this story: in the Internet age, customer satisfaction can often be found within the very fabric of corporate operations.

"Wouldn't it
be nice if the
wondrous,
futuristic,

virtual

world of the
Internet was
just a little less,
well, virtual?"

UPDATE

Something magical is happening to our planet. It's getting smaller. Every day, more people and more information are making the Internet a place of incredible opportunity and transformation.

Suddenly, people just like you have access to potential customers, business contacts, partners and competitors in every corner of the planet.

How can you make the most of this opportunity? Well, we'd like to help.

We have all of the minds and resources of IBM focused on the emerging world of networked computing. Over the next few months, we're going to discuss strategies and technologies to help you get from here to there. Let's start by talking about what's going on across the planet.

Electronic commerce is becoming a reality thanks to improved security and encryption technology like our innovative Cryptolopes which ensure that messages are read only by the people you want reading them.

Cybermall are springing up everywhere, letting companies sell their wares to millions of customers on line, without costly premises. Instead of gathering dust

in a warehouse, products are made and shipped to order.

And what's more, the more enterprise data you can bring on line, the wider you can cast your net.

The managed IBM Global Network is helping companies connect. Enterprises are expanding to give customers and suppliers piping hot information on prices, inventory and delivery schedules. Making them more efficient and honing their competitive edge.

All thanks to one of the world's largest managed data networks with managed access from Rio to Reykjavik and 848 other cities worldwide.

By using Lotus Notes over the Internet, people in remote locations can work on the same project simultaneously, expanding their reach even further. If you are eager to take advantage of the Internet, you don't need to be a millionaire. Or a genius.

You just need to drop by www.ibm.com for further information highlighting how IBM can help your business thrive in a networked world.

This is just beginning. We have a lot more to share with you. Just remember: it's a small planet. And it's yours.

Solutions for a small planet



Special IBM Supplement - Network Computing

News Briefs
Ed. from Pg. 1)

The home page is not an end in itself, just a beginning

While the Internet can no longer be seen as a fad, initial enthusiasm on the part of consumers for exploring its rich sources of information and service could indeed wane. John Patrick, IBM's Vice President for Internet Technology sounded this note of warning even as interest in the Internet was at an all-time high—fueled by events and exhibits at Hannover's CeBIT fair, Europe's largest IT event.

Patrick's viewpoint, paradoxical as it may seem, is based on a serious concern that businesses could ignore the full interactive potential of their home pages and thus fail to draw sufficient levels of consumer interest to justify the whole process of developing and maintaining Internet connectivity. Above all, he believes, this is a crucial time for companies to actively exploit the Internet's unique qualities—as opposed to simply posting home pages.



John R. Patrick, VP Internet Technology

The dilemma, as John Patrick sees it, is this: many companies could be missing the whole point of the Internet as a corporate tool by regarding the home page as the end of their efforts rather than the opening lines in a chapter of opportunities. "I am disturbed," he says, "at the notion that once a company puts up a home page that's all there is to it. I can almost hear them saying 'the door is open, now let's get back to work.'"

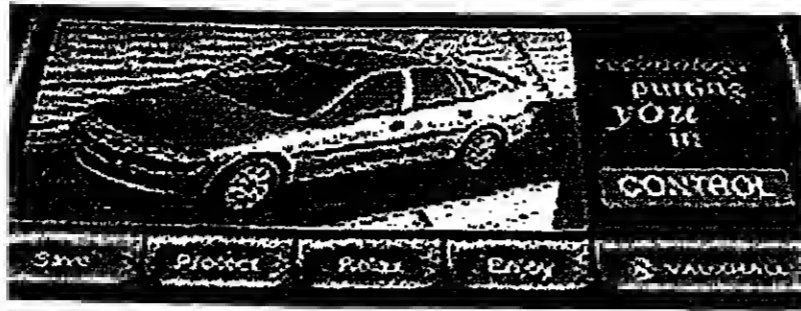
Apparently, many users are failing to look at the home page as a place for new ideas and innovative presentation. To be successful, companies must abandon the notion of simply digitizing the corporate brochure—and instead adopt a completely new production ethos. "The static home page is dead," says Patrick. What really counts, in his view, "is a live web site that sits up and does something."

"It's not all that difficult to accomplish," he continues. "All the tools are in place to bring off this transformation with relative ease. There's nothing mysterious about building a site that creates relationships...that exploits the potential of multimedia by making it rewarding to explore."

On the other hand, with all the competition out there on the Internet, it's not just smooth sailing. Developing and maintaining a successful Web site can be costly—but so are full-color corporate brochures and catalogues. And while such pieces might be thrown away at any time, a Web site is potentially forever. An ongoing effort that continues over time to attract interest, respond to inquiries and open the enterprise to outside interest of huge proportions.

And that's the real key: unlocking company resources, and deploying years of accumulated information, to reach a new worldwide constituency that includes everyone from shoppers to shareholders to suppliers to multinational organizations.

"The technology and the interfaces exist," concludes John Patrick, "to selectively move the data that's often trapped in back-office systems—and get it onto the Web where it can connect, in real time, with real people." But in doing this, the fundamental principal to bear in mind is that the home page is only the first step.



Vauxhall: on the highway to the Internet millennium

Vauxhall has become the first UK auto manufacturer to launch a fully integrated and interactive Web site for advertising and marketing on the Internet.

The site features innovative layouts and graphics that offer users the opportunity of getting everything from pricing to safety and comfort features to dealer locations.

Alisdair Luxmoore, Brand Communications Manager at Vauxhall, comments: "In our view, the project has had a very subtle and important benefit; the fact that it represents Vauxhall's use of highly advanced technology reinforces the image among buyers that Vauxhall cars themselves are the epitome of high-tech excellence. The medium is the message: it says that these are 21st century vehicles."

Vauxhall's Web project has been just one element in a campaign to launch the Vectra model. In addition, IBM has created the means to advertise the brand via interactive kiosks, CD-ROM and interactive television.

Reach is everything in the Vauxhall campaign: getting the story out with an extraordinary breadth and depth of detail that goes far beyond the confines of traditional media.

A corporate Web site can make information not only attractive, but also highly accessible. The Vauxhall site's interactive menus allow customers to absorb sales features in any order they choose, and in any amount.

Observers note that there's a rather persuasive immediacy to

the whole thing. It's as simple, for example, to locate your nearest dealer as it is to scroll through the available colors for different Vauxhall car models.

Luxmoore again: The response has been excellent. From the public, the press, industry experts and Internet users themselves. And most importantly, we're zeroing in on the right car-buying audience. Over a million hits in the first four months, which is equivalent to 50,000 viewers on the Internet alone.

We can measure which pages are looked at most, and when. We get feedback on which information is most popular—and it's fast and accurate."

IBM was involved in every aspect of the project: creating the Web site and its graphics, supplying dealer hardware and maintaining and updating the content. Vauxhall notes that IBM was the only company that showed competence in all the disciplines.

The challenge in developing real time marketing information is drawing attention to the site and holding it. One example: IBM fed live results of a rally to grab rallying enthusiasts. And still another boon for browsers: current road traffic information on the Vauxhall site—updated every 43 seconds and combined with useful maps and graphics.

Steve Byrne of the IBM Interactive Media Centre: "We can respond to a marketing need and provide a comprehensive creative/technical strategy for all-electronic channels."

A secure market for copyrighted material

There is general agreement that the Internet offers great potential as a marketplace for the sale and purchase of a wide range of copyright-protected material.

But moving forward to fulfill this goal, which would greatly enhance the quality and variety of Internet content, has raised a number of serious issues.

How to find and retrieve what users are looking for;

more effective business tool, IBM has formed relationships with a number of leading technology and information providers.

Thus, the technology is in place to facilitate the search, retrieval and purchase of content—including still images, text, sound and video—from distributed databases in a wide variety of formats hosted on a number of popular publishing platforms.

An example of how InfoMarket works. A user enters a query "XYZ Corp." on the InfoMarket search page, accessing all available data resources. In turn, he receives a relevance-ranked list of results, which may include a link to XYZ's Web site, credit and financial reports, news arti-



cles and consumer comments in newsgroup postings. Content selections are accessed—some will be free, and others will be in a Cryptolope requiring payment to view.

Pricing and usage permissions are explained in an abstract on the outside of the Cryptolope. InfoMarket processes payments and provides rights management services to the publisher. Customers are billed monthly for their purchases.

On the seller's side, InfoMarket is developing special Plug-N-Publish toolkits to allow publishers to customize the "look and feel" of how their content is presented. In addition, InfoMarket will support the ability to pay consumers who choose to read certain advertisements... allow direct marketers to reach highly targeted audiences...and even offer coupons and tiered pricing to volume users of the new service.

In developing this revolutionary service to make the Internet a

EXECUTIVE COMMENTARY

(Cont'd. from Pg. 1)

mature environment for sharing information over the Web.

Naturally, network services are indispensable, and the IBM Global Network is the largest voice and data network in the world. We'll either run the customer's applications on our network, build one for them, or operate the customer's existing system.

Q. You mentioned electronic commerce before. What kind of future do you see for it?

A. Unquestionably all the pieces are coming together. In fact, 1995 was a year of breakthroughs for electronic commerce. Two principal security protocols, S-HTTP and SSL, became interoperable. Banks and financial services companies embraced the Web. MasterCard and Visa agreed on an approach for secure credit card and transactions over the Internet.

In fact, at Internet World, we introduced Net.Commerce, a service that enables merchants to do business securely over the Internet.

In the near future, online marketing catalogues should have considerable potential, first in the business-to-business arena and then on a broader, consumer scale.

Electronic publishing will provide a radically new channel for journals and magazines. This isn't just a matter of making retrospective material available electronically—but of taking advantage of

rich new capabilities to create something fresh and compelling.

Again, at Internet World, we introduced Lotus Newsstand, a complete set of tools for distributing subscription-based publications over the Web.

Q. How long before we see companies and institutions actually using network computing for their day-to-day business activities?

A. Actually this is happening today. The 22 hospitals of the Greater Dayton [Ohio] Hospital Association, for instance, use the IBM Global Network to communicate with some 2,500 physicians in their coverage area. They transmit clinical information and patient records—making for more efficient, lower-cost medical care.

The same principles can be applied with equal value in other industries like manufacturing, distribution, media and finance.

Q. Can you give us some idea of what IBM is doing on the research front?

A. There are a number of very exciting developments in digital video. We held a live, interactive press conference over the Internet, for example, transmitting a digital video signal that could be received by anyone in the world with sufficient bandwidth. Digital libraries are another fas-

inating effort. We're helping the Vatican Library and others digitize material in their unique collections in order to share it with the world.

Our Research Division is also investigating everything from remote access and mobility to electronic cash and systems management. And one thing we've learned in our long history is that preserving vital business data—maintaining personal privacy and guaranteeing the rights of content owners—is absolutely critical.

Q. What would you say IBM brings to a customer who's interested in exploiting the Internet?

A. Well, the real key to exploiting the Internet is taking all the technology that's been developed—especially software—integrating it with services, and applying a real knowledge of the customer's business to produce applications solutions. We have the resources to do that for any customer, large or small. We have the most scalable, reliable technology, the trained service personnel, the network experience and expertise, and the business partners to make it happen.

A quarter century ago, IBM had an advertising slogan: "The way we put things together sets us apart." It seems that we're back to the future.

Behind the Internet: a new generation of Servers

Just two years ago, mainframes were virtually written off as a casualty of the move toward a decentralized form of computing known as "client/server."

Mainframes were not only seen as being expensive, but also unable to compete with a wide array of alternative technologies that were then flooding the world market.

As it transpires, however, many companies now realize that the much-heralded benefits of client/server computing have been overshadowed by the complexity and cost of supporting disparate information systems.

Today, businesses are searching for a better, more efficient way to gain competitive advantages—by going a step beyond client/server. That step is to Network Computing, where they can connect directly with their customers, employees, suppliers and many other constituencies in a manner that transcends both time and distance.

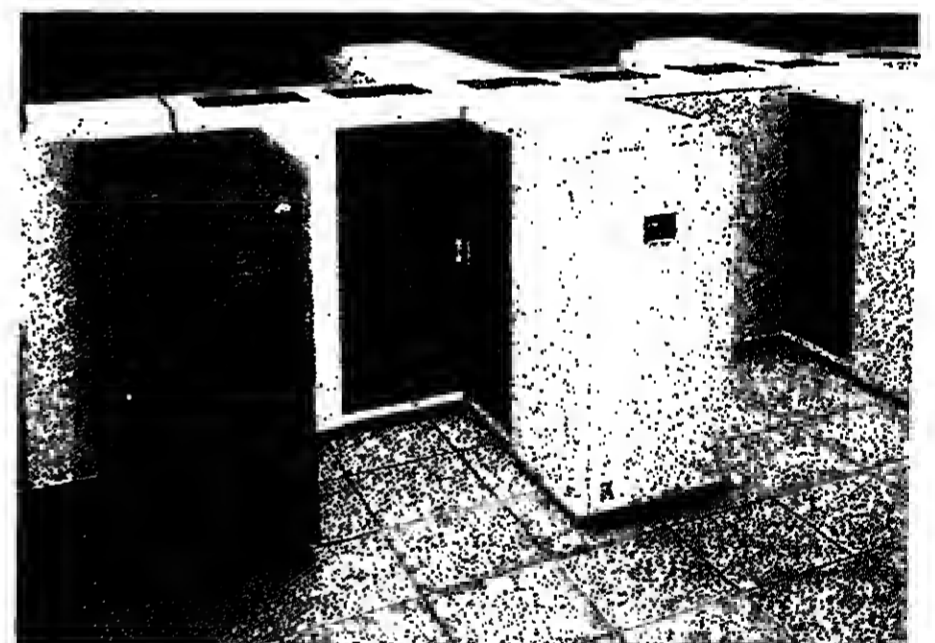
To enter the realm of Network Computing many companies are turning to a new generation of mainframes—large servers—which help them unlock valuable data stored in the firm's "glass house" and make it available to the outside world.

For Buell Duncan, general manager for product marketing at IBM's Paris headquarters, the move to more powerful and open servers has been an inevitable consequence of the increasing emphasis on information access and distribution.

"Today, much of the data in the corporate world is stored on large systems because they offer scalability, reliability and security at the lowest total cost—24 hours a day, seven days a week," said Duncan.

"These attributes become even more important as corporations seek to take advantage of the Internet and Intranets."

Major companies are already adopting the new server technology to cope with the demands of managing vast amounts of data. At the recent Internet World con-



IBM's S/390 Parallel Enterprise Server (left) is used at the heart of the client/server network at the 1996 Olympic Games

ference in San Jose, Calif., executives from American Airlines and Holiday Inn showcased industry-leading solutions developed by IBM that help them use the Internet to better serve their customers.

John Samuel, managing director of distribution planning at American Airlines, commented: "What makes the combination of [IBM's] S/390 and Internet technologies so exciting for American Airlines is that it provides us with the opportunity to establish an even better communications channel with our best customers—while at the same time reducing costs."

To support Holiday Inn's consumer Internet service, Holiday, which allows travelers to make reservations via the Internet, extra strength was needed. "We must have reliability, high availability and exceptionally fast transactions rates to support Holiday," said Dennis Erskine, vice president for systems and applications development. "Our System/390 provides all that and more."

In addition to developing more powerful yet cost-effective server hardware platforms, IBM has created a wide range of software servers that provide companies with complete, secure business solutions. When *The New York Times* wanted to offer its readers a

competitive, on-line search tool—an electronic version of the newspaper's classified ad section—it chose IBM's DB2 database server and web server to do the job.

"What's happening here is that companies are no longer using mainframes as traditional, hierarchical processors of information," says Duncan. "They're literally turning them inside out to give their customers new products and services."

From multimedia encyclopedias and online reference libraries to information on corporate Internet and Intranet sites—the large server is an ideal platform for storing and managing vast amounts of data in a reliable and cost-effective way.

And the large server is totally secure, a major consideration for companies interested in moving their commercial transactions onto the Internet.

Today's IBM's S/390 supports OS/390, a network-ready, open, integrated large-server operating system that runs both MVS and UNIX applications.

Special IBM Supplement - Network Computing

Network computing is creating the new era of Extended Enterprise

Christian Thomassen, Vice President, Network Computing, IBM Europe/Middle East/Africa, examines the dimensions of a rapidly developing trend in world business

Quite often, one hears that Internet technology is transforming business organizations into "virtual corporations."

Unfortunately, the term is misleading since it suggests that some ethereal cyberspace experience is going to replace the reality of productive, value-enhancing, day-to-day work.

What has evolved, as Internet computing gathers momentum, is a phenomenon that's more correctly described as the Extended Enterprise. Let me put this in perspective with a bit of historical background.

As technology has evolved, we've seen great changes in computing over the past three decades. First there was the centralized model of computing with mainframes and large central processors.

Then came the decentralised, or democratised, phase—the PC revolution which put a lot of the power in the hands of end users.

Now, we've evolved to the point where the computing power of the enterprise is linked—with mainframes and servers and PCs—in a cohesive network

The Internet has arrived, and it is fast becoming the very fabric of modern corporate life. Why? Because it makes huge amounts of useful, timely, pertinent and productive information available to everyone, everywhere, at any time.

What a revolution this evolution has produced. The Extended Enterprise is made up of employees with new levels of empowerment that add value to their work—communicating through a variety of devices that link them to the company's factories, suppliers, customers, prospects, shareholders, vendors, consultants, retailers, and wholesalers.

What does today's Extended Enterprise look like from the inside?

Typically, you might see that traditional departmental structures, with their rigid walls of demarcation, are giving way to quick, efficient network-based collaboration among people in various company locations.

This allows a wide range of different and highly targeted skills to be brought to bear on particular situations—with results that are

not only productive for the company but also especially gratifying for the participants. (The "skunkworks" concept, as an American colleague told me, is very much alive and well.)

Other examples of improved collaborative effort abound in the Extended Enterprise.

Under the new Internet paradigm, sales personnel can be out in the field—where they should be—and still, in effect, be part of the headquarters group. Also, suppliers and vendors can effectively be brought into the corporate loop on a regular basis. And customers, too.

And no longer do companies have to spend excessively to bring in respondents from outside to conduct on-going product and marketing research. Instead it can be done over the Internet. In minutes.

And consider the far-reaching implications of this revolution on a company's ability to cut back on the expansion of office space and related facilities—utilizing that money, instead, for plant and laboratory enhancements.

But at its heart, the Extended Enterprise is all about creating possibilities for the workforce. Those who choose to work at home some of the time can do so. Others can choose to work in off-site "clusters" with a just a few fellow workers. And, through access to the Web, employees' sources of learning, training and work-enhancement are vastly



multiplied.

Not to mention their ability to conduct research around the globe. And to chat with their associates and colleagues in other firms, universities and on the plant floor. Openness is everything; and it's here today.

We're looking at a whole new way of enhancing morale and of building employee confidence and commitment. Upward mobility isn't just a hope in the Internet age; it's an attainable reality.

And consider this as well. Both intra-company connectivity and communications between a company and its many constituencies is being further driven by relentless advances in mobile and wireless technology. And by digital video, video libraries and through teleconferencing.

If all this doesn't add value for the Extended Enterprise—in all aspects of its business—then I'm sadly mistaken.

There's something else going

on here that's particularly worthy of mentioning. To be sure, both large and medium-sized firms embrace Internet computing for all the right reasons. But uniquely, the new paradigm of corporate life may well have its greatest impact within the huge universe of small and entrepreneurial firms which must, perforce, get every ounce of productivity from workforces of limited size.

Internet computing can extend the "reach" and information-access of everyone within such firms—by orders of magnitude. And that's what makes the small guys into giants—even on the body competitive world stage.

The Extended Enterprise came into being through Internet computing. It serves as a model for those who wish to revitalize a corporate culture. It is universal and its economic benefits are demonstrable. Why? Because knowledge is power.

IBM and the 1996 Olympic Games: an overview

The task of staging the most technologically advanced sporting event in history, the 1996 Centennial Olympic Games, is nothing short of colossal. Set to commence in Atlanta in just six weeks, the event is said to be the equivalent of holding two Superbowls (the American professional football championship) each day—over a period of seventeen consecutive days. Arguably, it is the largest combined event, of any kind, ever held on American soil.

Logistical challenges abound, and are as heroic in their dimensions as the feats of the Olympic Games athletes themselves. Nothing must go wrong in presenting—and reporting—a series of competitions that captures the imagination of a vast worldwide audience. Not only are the Olympic Games a sporting festival, they are a celebration of human achievement and progress.

As the Olympic Games official information technology sponsor,

IBM plays a pivotal role by providing technology, services, expertise and personnel to help the Atlanta Committee for the Olympic Games (ACOG) set up, organize and run the 26th Olympiad. In partnership with the ACOG, IBM has developed a range of solutions that address logistical challenges ranging from day-to-day administration to establishing and maintaining the Olympic Games Web site on the Internet.

IBM brings a wealth of expertise

to this task. It has played a key role in Olympic Games information technology since it first became involved 36 years ago with the winter events in Squaw Valley. Its contributions have evolved over the years, allowing organisers to benefit from wide-ranging technological advances and thus meet the growing demands of each successive Olympiad. IBM's experience in working with worldwide business partners flows directly to the process of making its Games management systems robust, scalable and highly flexible.

When the competitions begin this summer, IBM's most visible contribution—the Results System—will provide an historic first: instantaneous scores, results and updates for worldwide dissemination via the Internet, broadcasting and the press.

The ACOG's confidence in IBM's multiple capabilities is evidenced by the fact that the company was given sole responsibility for Olympic Games systems integration. The goal: to ensure that all technology provided by other ACOG partners—AT&T, BellSouth, Kodak, Motorola, Panasonic, Sensormatic, Swatch and Xerox—works seamlessly together as one total, all-embracing solution.

Bob Neal, Director of Information Systems for the ACOG, comments: "IBM is not just supplying solutions but helping us find solutions. By selecting the right product mix, working with other sponsors and suppliers, and driving to integrate solutions, IBM is truly a partner in our success."

The 1996 Olympic Games form an ideal testing arena for IBM to demonstrate not only its business ethos to a world audience—but the technology behind its unique solutions. The company believes the Olympic Games offer an unrivalled technological showcase and is solidly committed to sponsorships, over the years to come, in venues such as Nagano, Sydney and beyond. As the world leader in information technology, IBM can do no less than demonstrate—on a global scale—its ever-growing and ever more productive array of solutions to enhance the staging and enjoyment of the world's greatest series of competitive sports events.

"Safe-surfing" a key goal in Internet computing

A recent study of 1,300 businesses revealed that sixty percent had suffered financial losses due to information security lapses in 1995. For nearly two dozen of these companies, the total cost of these breaches exceeded \$1m.

This situation, and the publicity around it, has tended to create a climate of uncertainty among many businesses considering whether to take advantage of the power of the Internet.

By way of background regarding IBM's position and activities in this arena, the first point to be made is that computer security is as old as computing itself.

Although changes in the computing environment raise new security challenges, the fundamental issues remain constant. They include:

- Control of access to information
- User authentication and password systems;
- Encryption and decryption of selected data;
- The ability to edit shared databases of information, and;
- The ability of authorised traffic to pass through various network gateways.

With the vast increase in today's network connections and data flow, there are many more links in the transmission and access chain.

The challenge is to maintain the integrity of each link. IBM, a pioneer in security solutions, has come up with a strategy that is two-pronged: to implement local security control to ensure the integrity of the core system, and then to decide on an approach toward maintaining security as the customer interfaces with other computers in a highly networked environment.

To address these issues IBM has developed SecureWay, the common brand for its broad portfolio of security offerings which include a variety of hardware, software, consulting and services to help customers secure their

information technology.

For example, IBM's Internet Connection Secured Network Gateway actually installs a "firewall" allowing users to reach out into public networks like the Internet while restricting the ability of outsiders to gain access to internal systems protected within the "firewall."



IBM has also developed new security oversight tools: an audit capability, for example, which allows administrators to assess the security of the system, to access reports on invalid password attempts and attempts at unauthorised access.

Many people worry about threats to privacy posed by the Internet. According to experts, however, the development of encryption technology can actually guarantee both individuals and businesses more privacy than they have now.

Scrambling and unscrambling word and number messages on transmission, through the use of encryption and digital signatures, can ensure the confidentiality and integrity of the data exchanged—as well as the identity of the parties exchanging the messages.

Cryptolopes, for example, is an IBM-developed "electronic post office" that facilitates cryptographic signing and sealing, and is more secure than certified mail. (Now, in the US, when you send "e-cash" to the IRS, you can really prove it.)

Credit card transactions via the Internet, the transmission of

health data and other sensitive material—all are accomplished, when encrypted, more safely and privately on the Net than in any other way.

Of course there are issues yet to be resolved: how to make provision for third party access, those with legitimate claims such as the government in certain investigations, or a company with valid rights to documents in an employee's files.

IBM also pioneered DES, the Data Encryption Standard, based on private key encryption, which

it made available on a royalty-free basis to the public beginning in 1975. Endorsed by the international banking community, DES is used around the world, for example, to encrypt PIN numbers in millions of ATM banking transactions.

Bringing secure electronic commerce even closer is the recently signed agreement between IBM and another leader in computer security, RSA Data Security, Inc. The two companies plan to modify their hardware and applications so that they are interoperable. They have also committed to the development of open cryptography for the Internet, assuring customers and developers safe universal access consistent with current government regulations on cryptographic products.

Security isn't something that a company simply buys, installs and then forgets about. To the contrary, one of the most important elements of IBM's security portfolio is a consulting service to help customers design and deploy ongoing information technology security solutions.

Trained experts assess the possible security risks to a customer's system; they define security needs, recommend and implement security products and services in line with those needs, help administer security policies and practices, and audit security controls—repeating the process when necessary.

IBM knows that security is what will make business move on the Internet and it has the industrial-strength technologies to make the Internet safe for business.

The ten "myths" of network computing

Cont'd from Pg 11

experience on a company's Web site is a real turn-off. Better to invest the time up front to make sure that users enjoy a fulfilling experience right from the get-go.

Myth 6: No one is making money on the Internet.

That's something we hear a lot of, but we take it as something of a lame rationale for not getting on the starting blocks. It's more reasonable to assume, in fact, that those who are profiting from Internet computing probably just aren't blowing their horns about it to any great degree.

The operative principle is not to get uncomfortable if success stories don't abound in your industry. Competitiveness breeds confidentiality, but that's no reason at all for a wait-and-see attitude. Who knows? A rival could be up on the Internet right now, taking customers away right and left!

(Note: for a real confidence-builder, we refer you to a whole range of IBM-based Internet success stories on the first page of this supplement.)

Myth 7: Security is a big problem.

We'd say that it's an issue, a very real one, but not necessarily a problem. To get IBM's view on the current state of play, we refer you, again, to an important front-page story of this supplement.

Myth 8: Now that network computing is here, the client/server model is dead.

Some companies have considered skipping C/S systems in favor of moving right into the world of network computing. But are the trade-offs worth the risks?

Behind today's network-based front ends and user interfaces lie some complex Client/Server-based information systems. With implications for security, distributed data, transaction and multivendor-systems management, messaging and even more.

Bottom-line, companies should probably keep their focus on implementing C/S-based systems as a solid foundation on which to build network computing. Most leading examples of successful networked applications are, in fact, built as extensions to C/S systems.

Myth 9: The Internet is an external tool.

As the song says, "It Ain't Necessarily So!" Too many com-

panies, unfortunately, have overlooked the Web's vast potential in streamlining internal communications and connectivity. As an in-house, corporate tool, the term "Intranet" is particularly apt and descriptive. IBM's experience, for example, in implementing a Lotus Notes-based system for a



portion of our field force is very revealing.

The "Intranet" application became very popular—so much so that we published it on the Web allowing everyone with a browser, and appropriate security authorisation, to access it. On a worldwide basis.

One neat side benefit of this implementation is that it was relatively easy to take a subset of the application and make it available to all Web users, thereby giving access to our customers, partners and others via the IBM home page.

Does all this raise ideas for your company?

Myth 10: If you're not on board it's already too late.

Hey, you already guessed our take on this one. Of course it isn't too late. Just do it!

Take the rational approach. Begin by introducing network computing technologies based on the information to which you want to provide access. Then, move on to integrate these applications with corporate information and operations systems.

Finally, exploit the capability by enabling customers—around the world—to perform "self-service" in virtual malls, catalogues, kiosks or via on-line services. What it's all about, really, is "self-service" in a company's long-

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IBM Home Page for General Information:

<http://www.ibm.com>

Network Computing

<http://www.ibm.com/NetworkComputing/>

Internet Products & Services

<http://www.ibm.com/Internet/>

John Patrick

IT in manufacturing

Industry in transition • By Andrew Baxter

The pace of change accelerates

While information technology is increasingly important to manufacturers, they are faced with a growing list of competing IT products. Managers are anxious not to be tied into any one system that might be obsolete in five years' time

I went out to lunch, and when I got back the whole industry had changed" - that was Bernie, a character in the Doonesbury cartoon strip, explaining why his software company had suddenly hit trouble.

In the real life world of manufacturing, developments do not occur quite as fast as that, but anyone revisiting the computers in manufacturing scene after two or three years on a desert island would be struck by the pace of change.

Nowhere is this truer than with the Internet. Three or four years ago, most manufacturers would probably not even have heard of the Net, let alone understood its potential significance for their businesses. But a recent survey of UK manufacturing industry by Benchmark Research, for Computer-Driven Research, has shown that the Net was one competitive tool that industry seems ready to grasp two-handedly. Manufacturers saw the most important potential benefits as quick access to information, faster communications at lower cost and dedicated marketing, while the most important envisaged use was for international communications.

The more forward-looking IT companies have been moving quickly to address the new opportunities. At Intergraph's International Graphics Users Group event in Alabama last month, the US company announced an initiative involving software giant Microsoft which, put simply, enables much-improved delivery and sharing of graphics and engineering information across the internet.

Earlier this year, Intergraph had launched the first complete line of web server solutions using the Windows NT operating system, and is also pushing its new document management system, DM2, as a way to manage all the technical information being shared

FOCUS

Focus on IT in manufacturing

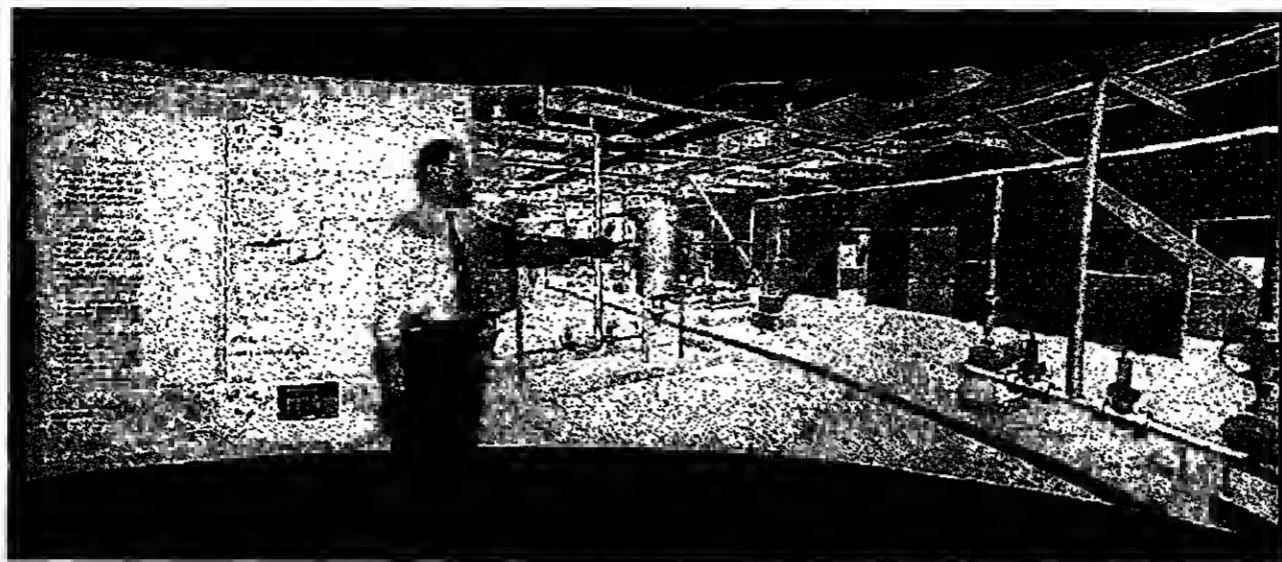
New ways to manage the supply chain and share information via the Internet

between different sites that are linked by the Net. "You need a way to manage these links," says William McClure, vice-president of Intergraph Mechanical. "Otherwise the Net could become a tool for distributing out-of-date data."

According to the Computer-Driven Research study, one use for the Internet will be to manage "the extended enterprise" - another phrase that might have sounded unfamiliar in the early 1990s, although the concept of supply chain management was already firmly rooted.

Coming from the same stable as the "virtual" corporation or organisation, the extended enterprise model involves a strategic alliance between a manufacturer and its suppliers to develop products as one organisation of pooled skills and resources.

The relevance of the Internet to such a model was illustrated this spring with the launch by American Software of Supply Chain Planning. This integrates the capabilities of its



The shape of things to come in global engineering projects: the Cambridge-based Cadcentre's Hyperplant concept demonstrates how engineers of tomorrow will use Internet technology for design work, combining electronic mail and videoconferencing

supply chain management solutions with the Internet to enable companies to manage their supply chain environments easily and cost-effectively.

The product permits the simultaneous sharing of supply chain information. Data can be incorporated from the field, distributors and other resources using the Internet in real time. The information, says the company, can then be assimilated into forecasts, and results can be viewed and adjusted by all levels of the supply chain before the data is integrated with manufacturing or purchasing systems.

Manufacturers will have to choose from a growing list of competing software products and hardware to support their extended enterprise models. "To manufacture in this environment, the last thing you need is a computer system that gets in the way," says David Reid, segment manager for the UK manufacturing and process sector in IBM's AS/400 mid-range computer business.

As one might expect, Reid believes the AS/400 has a strong future in this environment, partly because it comes as one offering integrating communications, a database and software applications from companies such as SAP, Marcam and J.D. Edwards. The capital cost might be higher than for a Unix-based system, he says, but the need for systems integration is avoided.

Meanwhile, software that supports supply chain management techniques has become a much bigger market than some thought five years ago, and one forecast suggests it will be a \$1bn industry by the end of the century. "Supply chain management is set to become even more prevalent," says Arthur Vonchek, director for northern Europe operations at Manugistics.

Manugistics has created a Supply Chain Architecture that draws together real-time data from a range of sources within and between compa-

nies, and integrates it so that managers can access a "single view" of the entire chain. "Scalable client/server technology will see supply chain systems that offer a single, global supply chain image," says Vonchek. "Advanced software algorithms will enable automated 'lights-out' decision making - and Internet and intranet technology will ensure even greater connectivity between customers and suppliers."

On the product development side, the need for sharing of accurate, up-to-date information is vitally important in an extended enterprise, because the model relies on suppliers taking responsibility for their section of the overall design. This is one reason why the market for product data management (PDM) software is picking up so quickly, although it has only recently reached a level of sophistication that enables its use in an extended enterprise. A PDM package aimed at the extended enterprise was launched earlier this year by Sherpa.

Another important choice for manufacturers is that of an operating system, where - again - the pace of change is accelerating. "Over the past 10-15 years, proprietary mainframe and minicomputer operating systems such as IBM, Prime and VMS have lost their markets to open systems solutions based on Unix variants, followed by PC solutions running under MS-DOS and Windows," says Richard Longdon, executive director of Cadcentre, the Cambridge-based engineering software developer.

One of the most significant recent developments has been that of Windows NT, the Microsoft operating system for which some 800 software applications are now available for the manufacturing sector, ranging from mechanical design analysis to enterprise resource planning.

Windows NT took a while to gain commercial acceptance, but sales picked up early last year. Now, according to Rod



From plastic to a virtual world: a plastic model is transformed into a realistic plant, using Visuality, Cadcentre's group visualisation system

Blackwell, Microsoft's UK business manager for manufacturing solution providers, Windows NT is "on a roll" because it can provide an enterprise system, an engineering application or a specific shopfloor solution. Version 4.0, due for release this summer, will feature the Windows 95 "look and feel."

The development of Windows NT led, in turn, to Microsoft BackOffice, a set of integrated applications for the server including the operating system itself, relational database, and connectivity to IBM mainframe and midrange systems and networked PCs. When Windows NT and BackOffice is combined with the front Office suite and Windows 95, says Blackwell, manufacturers can achieve "integrated customer-oriented supply chains capable of delivering real-time information across the corporation through a single consistent user interface."

One important testing ground for Windows NT is in computer-aided design (CAD), because, as Longdon notes, intensive graphics applications stretch computers and their operating software to their functional limits.

According to Longdon, Windows NT will become a significant operating system for CAD. But, he says, suggestions that it would eradicate Unix as a CAD operating system need to be taken with a grain of salt.

"Communication between operating systems is no longer a major issue: it is comparatively easy to take data from a PC, for example, use it on a Unix machine, and then send it on to a mainframe to be stored in an Oracle database."

Some software suppliers feel so confident about Windows NT that they have ported virtually their entire range of applications software to the Microsoft operating system. This is what has happened at Intergraph, where chief executive Jim Meedlock says NT is "a better core product" than Unix. "Any small software developer that is not writing 32-bit software for Windows and NT is undone," he says.

What should users in industry make of all this? Mike Wood, director of manufacturing practices at software vendor Ross Systems, sums it up neatly: "Manufacturers are not really interested in technologies, be it Unix or Windows NT," he says. "They just want to know that they won't be tied into any one system that might be obsolete in five years' time."

Further information from American Software, tel UK (0)1382 853554, fax 854568; Cadcentre, tel UK (0)1223 556655, fax 556666; ComputerVision, tel UK (0)1203 417116, fax 419137; IBM AS/400 business, tel UK 0800 400000; Intergraph (UK) tel (0)1793 619999, fax 618508; Manugistics tel UK (0)1344 306400, fax 306480; Microsoft 01753 270001, fax (0)181 242 4200 (Text 100); Ross Systems, tel UK (0)1604 30050, fax 304953.

The make-to-order market • By Andrew Baxter

Problems begin after the contract is won

Because of a lack of systems integration, many manufacturing companies have problems translating proposals into live contracts, especially when it comes to creating production plans

Manufacturers can be divided into two camps - mass-production companies building discrete products on a repetitive basis to stock and sell, and "make-to-order" companies which build products that meet the specifications of a single customer.

"Make-to-order" is the fastest-growing segment of manufacturing - in the UK alone, it is worth about £22bn a year, according to a recent survey by Benchmark Research. Another research company, Boston-based Advanced Manufacturing Research, estimates that about 25 per cent of the £32.8bn world manufacturing management software market falls within the "make-to-order" segment.

The IT demands of the "make-to-order" market, normally medium to large-sized engineering companies making everything from buses to robots, can be very different from those of the mass producers. According to Massachusetts-based Visibility, which produces a "make-to-order" software package of the same name, "these companies require integrated information systems that manage a lifecycle of highly interrelated processes while providing the agility to respond to changing customer needs and market conditions."

Yet in some parts of the make-to-order cycle, the use of IT is very limited. Successful bidding, obviously, is crucial to success for "make-to-order" producers but the Benchmark survey claimed that lack of computerisation and inefficiency in bidding for contracts was costing British industry as much as £1bn a year.

Only 50 per cent of companies monitor the actual costs

of bidding, a third admitted difficulties in hitting tender deadlines all or some of time, and 39 per cent said they had less time to prepare bids.

Half said that missing deadlines seriously affected their chances of winning contracts, while the ability to handle contracts was a big consideration in deciding whether to bid at all. On average, the survey found, it took five people three days to prepare a contract proposal, so a significant amount of time is wasted on fruitless bids.

The problems do not end, however, with winning the contract. Because of a lack of systems integration, 75 per cent of the companies had problems translating proposals into live contracts, especially when it came to creating production plans.

The Benchmark survey was commissioned by Cincom Systems to research the need for its Acquire software package, launched last year to automate and manage the sales cycle process from proposal to estimating, product configuration and proposals.

"A lot of people told us that their business had changed dramatically - they now have very short lead times to tender for highly customised contracts," says Alastair Sinclair, director of Cincom's European operation. "Most of the bidding preparation is still being done almost on the back of a cigarette packet and if Acquire can help a manufacturer win two contracts out of six, rather than one, it would make a dramatic impact."

The Acquire package costs from £20,000 for a basic system, and Cincom hopes purchasers will obtain a quick payback as the survey research showed that bidding costs account for an average of 12 per cent of contract value.

Users can build a complete library of data and product configurations to reduce continually the time and effort needed to produce proposals. If a bid turns into an order, the information can be carried straight through into ERP

(enterprise resource planning) systems sold by Cincom or other vendors. If the bid fails, it becomes part of the historical data that will be used to prepare the next one.

Sinclair says he is pleased with the take-up of the system since its launch. European customers have included Esec, which makes machines for the semiconductor industry, tractor maker Steyr-Daimler-Puch and Endress & Hauser, the German valve and pump producer. German and French language versions were due to be launched this month with a Swedish version following in September.

A separate market is opening up, too, for the sales configuration element of the Acquire package, aimed at makers of high-volume, highly configurable products such as personal computers.

A typical customer is GEC Alsthom Low Voltage Equipment, which is currently in the pilot stage of using the Acquire package. It bought the software mainly for its ability to configure products, and especially at circuit-breakers.

In this market, customers increasingly want a quick quotation on a product that comes in thousands of different permutations but is built from the same few hundred components. The company can now produce a quotation in a few minutes to a customer's specialised request, where previously it might have taken two hours.

Visibility, meanwhile, already has around 800 customer sites worldwide for its product, which is aimed at the enterprise-wide IT needs of "make-to-order" or "agile" manufacturers - everything from sales and quoting to engineering, production and after-sales services. Customers include Pratt & Whitney, Sulzer Pumps and ABB.

Visibility, founded in 1988, owes its success partly to "building from the ground up" for the make-to-order market, rather than adapt a system designed for mass production, says Michael Dunn, president and chief executive.

This is emphasised by Michael Peirce, chief executive of Dublin-based Mentec, which sells Visibility in the UK and Ireland and also has a stake of

about 15 per cent in the Massachusetts company. "The day has ended when a single package could fit both types of manufacturing," he says.

Another element in Mentec's growth has been its focus on developing implementation technologies as much as the software package itself, says Dunn. Some of the user industries' past disappointment with systems that failed to meet expectations was because of failed implementation, he says.

Visibility, which is essentially a one-product company, has seen sales surge to an expected £32m this year. For next year and 1998, sales should be £45m and \$80m respectively, says Dunn.

Mentec's sales growth from Visibility should be similar, says Peirce. "It's our flagship manufacturing product and the development of Visibility into an enterprise-wide product will keep our hands full."

The relevance of products from companies such as Visibility, Mentec and Cincom could become broader as the lines blur between mass production and make-to-order.

Large companies that have traditionally espoused repetitive manufacturing are increasingly looking to become agile and order-based too. But that is hard to achieve, and - predictably perhaps - Peirce says any company that tries it without a dedicated make-to-order software package could end up "dead in the water."

Cincom Systems, tel UK (0)1223 542300 542310; Mentec, tel Ireland 3531 255 8444, fax 3531 255 2808; Visibility, tel US 508 694 3000, fax 694 8020

Survey on IT in manufacturing

The results of a pan-European survey on the impact of IT in electronics manufacturing will be featured in the FT-IT Review in September. The survey, partly funded by IT vendors, is being carried out by analysts at Cambashi in Cambridge. For details, call Brian Gott or Mike Evans at Cambashi on +44 (0)1223 460 438, fax +44 (0)1223 461 055; e-mail, 106431.3342@CompuServe.com

Constructional steelwork sector • By Andrew Baxter

Boost for the building industry

European project highlights the advantages of using IT to integrate manufacturing and management processes

How can an insular craft industry that is made up of many small and medium-sized companies, and is perceived as not investing enough in technology, be turned into a state-of-the-art integrated manufacturing sector?

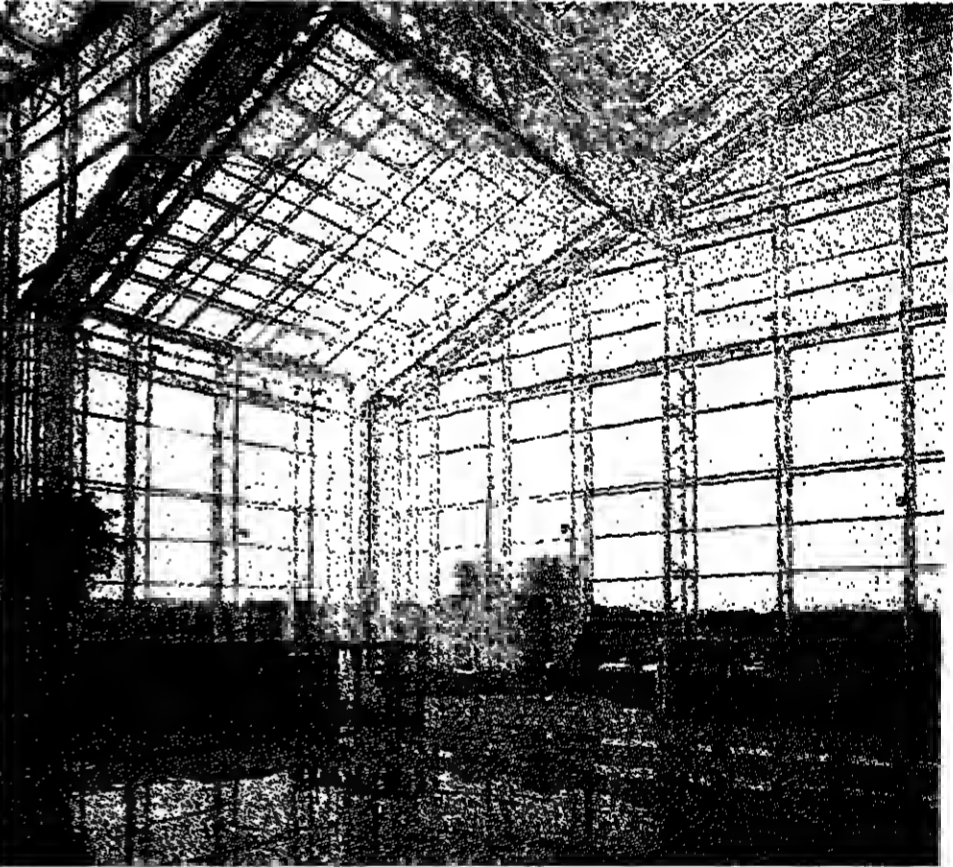
One approach is to introduce computer integrated manufacturing techniques and develop the related enabling technology and standards. This is the aim of the Europe-wide "CIM-steel" project, which is aimed at placing the European constructional steelwork sector in a leading position to compete with overseas rivals and alternative construction materials.

The Ecu45m (\$58m/£35m) Eureka project is about tailoring for the constructional steelwork industry the kind of computer integrated manufacturing systems successfully used within the aerospace, automobile and general manufacturing industries. To achieve this, 45 organisations including designers, fabricators, software houses, research and trade organisations and academic institutions have come together from eight participating countries.

In the UK, the project has been partially funded by the Department of Trade and Industry, with Taylor Woodrow, the construction group, acting as lead organisation. The other countries involved are Austria, Denmark, Finland, France, Italy, the Netherlands, and Sweden.

Among several important goals, the project aims to:

- Raise awareness within the industry of the business advantages of using IT to integrate design, manufacturing and management processes and cultivate the concept of "managing information for profit"
- Develop the enabling technology required for the exchange of technical information between different software products used by different organisations, leading to international standards.
- Exploit the opportunity provided by the introduction of "Eurocodes" to develop integrated and harmonised design procedures, guides and aids for use in the collaborating countries.
- Incorporate the design



A typical structural steel building - this one is located at Swindon, Wiltshire - which can benefit from the CIMsteel project which integrates standards in construction work with steel

procedures and information exchange technology into new world-class software.

□ Rationalise the provision and specifications of materials and products as part of the integration process.

□ Develop advanced databases and management information systems which are compatible with the emerging standards.

□ Develop and demonstrate a cost-effective robotic welding system.

□ Investigate the wider challenges and issues facing the industry.

With such broad aims - and a large number of participants - it is perhaps not surprising that a project conceived in 1987 is concluding only this year and has taken up some 400 man-years of work. Dr Fikry Garas, CIMsteel project manager and leader of advanced technology projects at Taylor Woodrow Construction, points out that CIMsteel is "unique in terms of its value and scope, as it is trying to address the integration of the whole building project."

The project began in earnest in 1988 with a definition phase, followed three years later by the start of an implementation phase. Last autumn an impor-

tant milestone was passed with the launch of CIMsteel Integration Standards (CIS) by Tim Eggar, the UK industry minister.

These are a set of standards for the direct digital exchange of engineering information between the diverse software packages used during the evolution of a steel framework.

The key components are a series of standard specifications for information models which help software vendors to write an export and import translator into their product. These can convert or retrieve the project data as a CIS "neutral file" from which data can be picked up and read by any other CIS-approved software package.

The translators do not affect the software, so users can continue to choose the best package for their requirements. But by using the translators, vendors and users will not need to liaise to ensure compatibility.

Using the standards, it is hoped, will increase productivity. Time will be saved as information need not be regenerated, quality will improve because the errors introduced in data re-entry will be eliminated, and the collaboration between partners, suppliers and clients will be improved. Garas says the stan-

dards were the main focus of the CIMsteel project, but there have been other developments, some of which are already available. For example, the project has supported the preparation of best-practice documents which will be widely used by the steel construction industry.

With the project formally closing this year, it already has a critical mass to ensure the intentions can be turned into reality, says Garas. At the time of the standards launch, 11 software vendors had committed to put products on the market that meet the standards, and more have made commitments since then.

Also, a number of end-users had begun demanding from their IT suppliers that they follow the standards. "This year, we will see the implementation of the standards in real-life projects," says Garas.

The momentum will also be sustained through events such as workshops, seminars and demonstrations of how the standards are being applied. One such demonstration at a recent DVI event was of a real industrial project being engineered by Foster Wheeler Energy in one of its UK offices.

Further information from Dr Garas, tel UK (0)181 575 4505 or email f.garas@telconsult.co.uk

Advances in computer-aided design • By Mike Farish

Variations on a theme

How software was used to redesign the Polaroid Spectra camera within specific criteria

When a London-based design consultancy, Fankhurst Design & Developments (PDD) was given the job of redesigning the Polaroid Spectra camera, the fact that it had to start from an existing design was little help. The project manager at PDD, Paul Ferris explains that the camera had originally been designed back in the early 1980s, but as the mid-1990s neared, Polaroid felt the camera needed a complete overhaul, especially in the light of plans to launch it into the US and Asian markets.

New software is accelerating product development

It was perceived to have an "old look" and poor ergonomics, with the handstrap and eyecup needing to be made much more user-friendly. But at the same time, a key part of PDD's brief was that the redesigned camera should, as far as possible, be constructed in much the same manner as its predecessor using similar fabrication techniques and components, such as snap-clips, lugs and ribs.

In the industry phrase, PDD had to retain as much as they could of the original "design intent". The company's use of computer-aided design (Cad) technology, however, made

various "constraints" that limit or condition the design options open to them.

Users can, for example, write into the software instructions that in any particular design, some specific element - a wall or a spar - must always meet another element at a set angle or that it must be twice as long or three times as thick.

Any such geometrical condition can be set provided it can be represented as a mathematical equation.

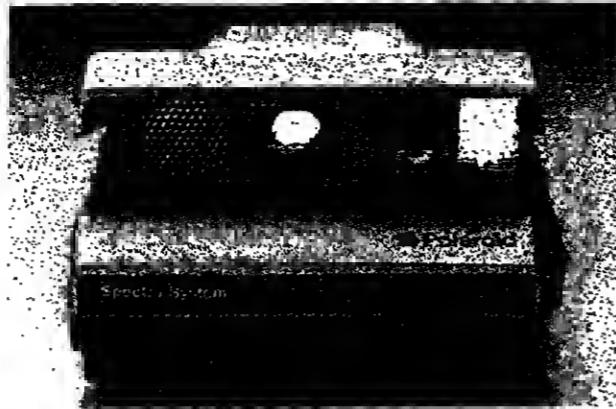
Paul Ferris says that after constructing a model of the existing camera within the software, PDD was able to experiment with new configurations easily and quickly by stipulating a few relatively simple constraints, largely the maintenance of some key absolute dimensions and the relative relationships of some others.

"When a wall was extended, the clip behind it would automatically stretch accordingly," he says. When the job was complete, "all of the external faces of the camera had been changed".

In the event, the redesign took 37 weeks to complete, but without the Cad software's ability to manipulate the geometry in a variational manner, Paul Ferris estimates the project would have taken half as long again.

The capability that that proved so useful to PDD is now embodied in virtually every main Cad software package - but to different degrees, in slightly different ways and under different names, such as "parametric", "adaptive" and "dynamic" modelling. But all involve the same basic discipline of writing equations to set constraints within which designers have the freedom to experiment and have the software show them how changes in one area of a design will affect the rest of it.

These new Cad technologies have been seeping on to the market for several years. Many companies are now getting to grips with the potential they hold both for accelerating product development timescales and



The Spectra: precise exposures and automatic focus in milliseconds

enhancing design quality through greater freedom to experiment. Just how big an impact they can have on the design of completely new products is still unclear, but their utility in manipulating existing design data to produce derivative products is certainly considerable.

Hornby Hobbies in Margate, for instance, manufactures model trains and cars, for use in electric train sets and the popular Scalextric car racing game. By definition, its prod-



Polaroid's new digital camera, the PDC-2000 range, is aimed at commercial customers, and has been under development for four years. Prices start at \$2,985

ucts, at least in external appearance, are miniature facsimiles of their full-size equivalents. The company has, for instance, just released its model of the Eurostar Channel Tunnel train.

But according to Mike Walters, product engineering manager, adapting existing design

information to Hornby's own requirements is far from easy. Even where it receives CAD data from the manufacturer of the real-life car or train this is often incomplete or segmented in a way that limits its usefulness. Hornby, he points out, is aiming to produce a single, consistent Cad representation of the whole model surface that can be used to drive manufacture of the required mould-tooling.

Within the last year, Hornby has therefore installed the Pro/Engineer Cad software system from Parametric Technology Corporation (PTC), the US company widely regarded as pioneering the constraint-based modelling approach.

The company is fully exploiting the Cad system's ability to store complete 3D design data. It is, for instance, using 3D Cad information to drive a stereolithographic "rapid prototyping" process, which can bypass the former need for handmade wooden models of its products to support tool-making. In addition full colour Cad images can be used to accelerate the approval process by the marketing department.

The company is also beginning to explore how it can exploit the software's parametric modelling capability.

Intriguingly, Mike Walters says one obvious application will be in validating the action of the pistons and drive-rods on model steam trains. The variety of wheel sizes, axle lengths and configuration types currently make this a very demanding task. But he is confident that the leading-edge CAD capability, the company now possesses will soon make much simpler the job of replicating the age of steam.



Built in record time for the Derkater, the world's most advanced unmanned reconnaissance aircraft was completed in just nine months after a team of 50 designers from Lockheed and Boeing started work on the project. A significant factor in this time-saving was the use of Catia Cadcam software, run on IBM RS/6000 workstations and servers. Derkater is the first military aircraft designed without the creation of physical design mock-ups

Production costs • By Andrew Baxter

Even at the earliest stages of designing a product, companies want to know how much it is going to cost to manufacture. Until recently, there has been no quick, accurate way to do this and the only solution was an estimate or guesstimate.

However, an innovative software package launched in the US two and a half years ago by Massachusetts-based Cognition Corporation uses artificial intelligence to solve the problem. The software, Cost Advantage, is sold exclusively in the UK by Milton-Keynes PS Industry Group.

The software takes basic "back of the envelope" designs and gives an early indication of how much a new product will cost to develop and manufacture. It then provides continuous feedback on cost and productivity as the design evolves, updating the cost as the design changes.

At its heart is a series of process models which are used to build up a knowledge base on every type of labour and material that is likely to be involved in the manufacturing and assembly process.

Mike Cronin, Cognition's chief executive, points out that because the software is a rules-based expert system, companies can link it with their own

Farewell to guesswork

Artificial intelligence provides comparative cost estimates for different manufacturing methods

corporate knowledge-base and question it on why a product cost a certain amount to make. This gives it a clear advantage over traditional spreadsheet-based methods of cost calculation.

But, says Cronin, the package has caught on so quickly not just because of its functions - just as important is the way it can be linked to customers' existing Cad software. Indeed, most customers purchase the software as an add-on.

The software will work with any parametric or feature-based solid modelling system - i.e. one that recognises, for example, a round hole in a design for what it is, and not simply as a circle - and has already been fully integrated with Parametric Technology's Pro/Engineer software.

To use it, a designer would pull down a menu, and click on a button. The software first checks that the product can be manufactured on the user's factory equipment, then calcu-

lates the cost. Integration with SDRCA's IDEAS Master series and IBM's Catia software will follow later this year, says Cronin. Cost Advantage can also be used with Cognition's own pre-design analysis software, Mechanical Advantage.

At the other end, Cost Advantage can be fully integrated with process planning systems, linking particularly effectively with PSI's own SuperCAPES computer-aided process planning, estimating and costing system.

Cost Advantage was developed from a product called Cost of Manufacturability Guide, made by the former Cognition Inc. In the US, users of Cost Advantage include Xerox, Texas Instruments and Boeing, while European customers so far are mainly French - such as Peugeot in car parts and Schneider in electronics.

From its European headquarters in France, Cognition is now pushing into other conti-

ental markets, while PSI launched Cost Advantage for the UK market at the ICAT'96 show at Birmingham's National Exhibition Centre in March.

The initial response was "absolutely staggering," says Russell Howarth, PSI's sales and marketing director. Aerospace and automotive customers were particularly interested in the software, which costs about \$20,000 a seat.

Users in the US are finding that they can now produce cost estimates up to 65 per cent faster than with alternative methods.

But there are other benefits, too, says Cronin: the software can be used to produce comparative cost estimates of different manufacturing methods. A user could quickly establish whether it would be cheaper, for example, to make something out of sheet metal, by machining it or by using injection moulding.

Cost Advantage runs on Unix but a Windows NT version will be available probably by the end of the year, says Cronin.

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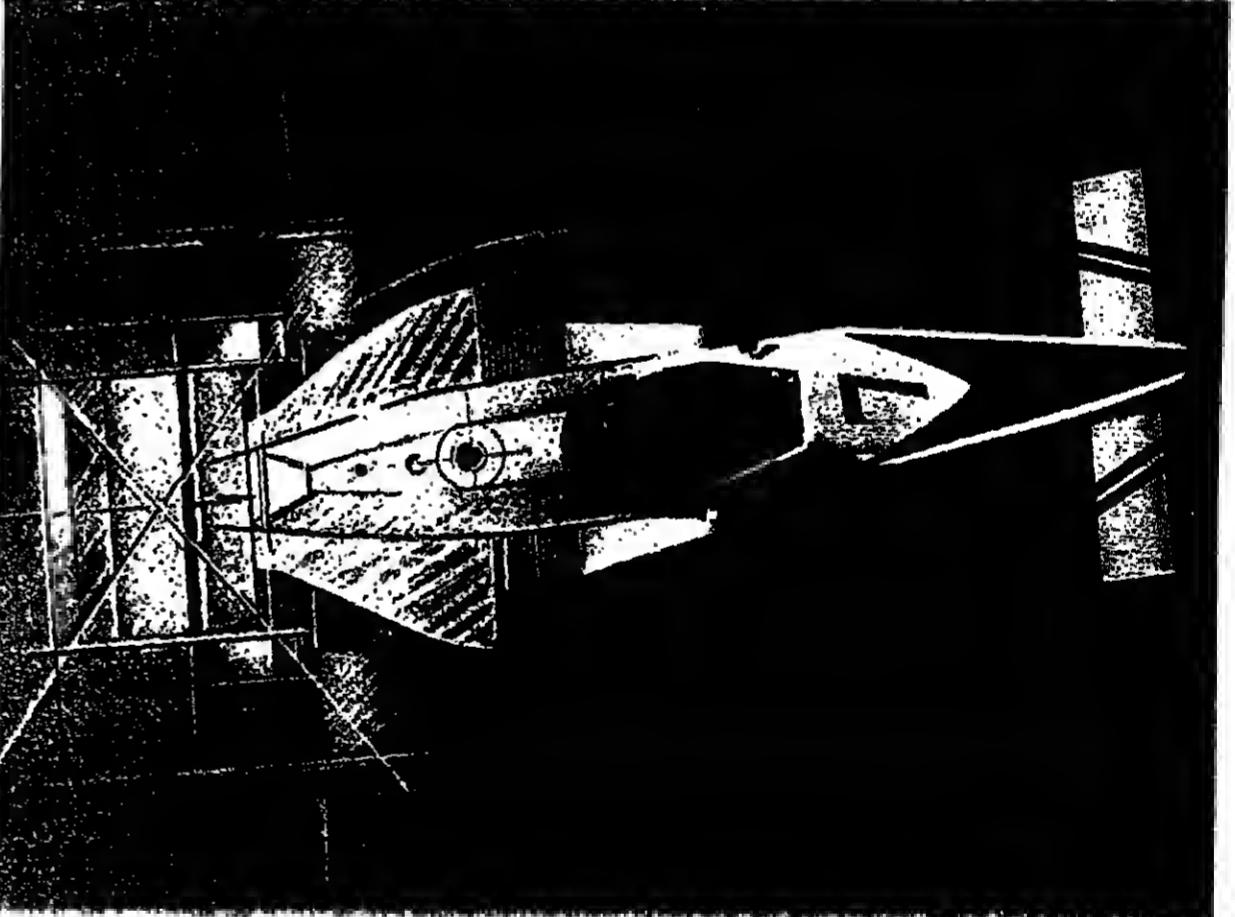
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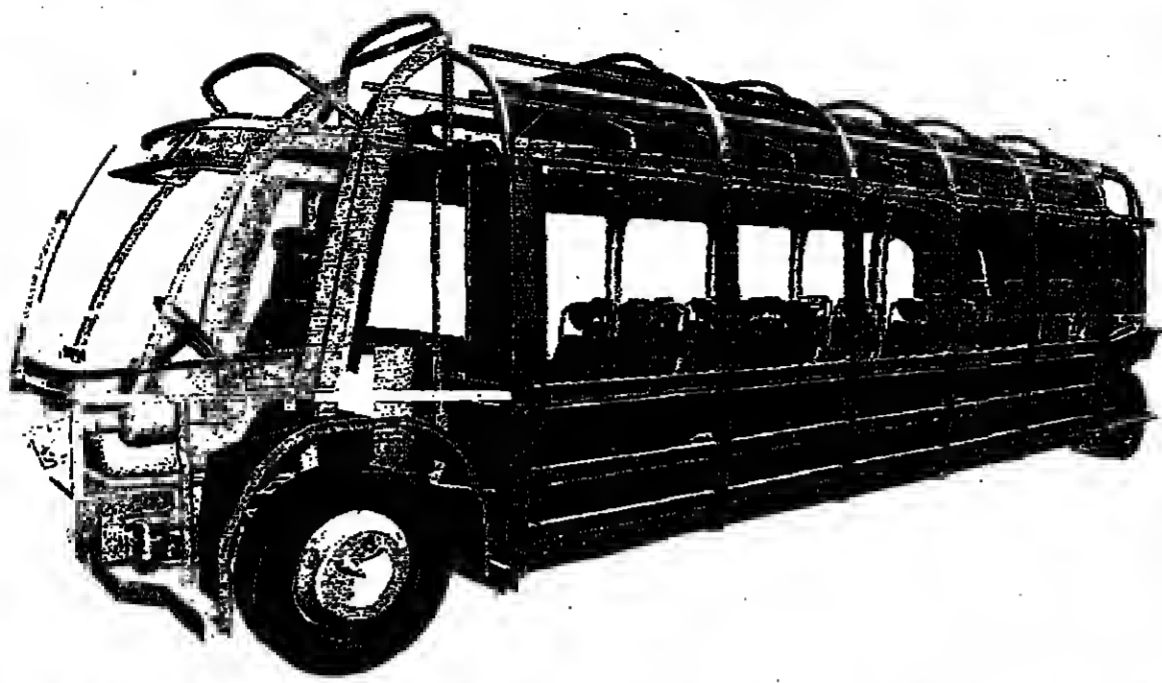
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IT in manufacturing



Futuristic approach to vehicle development: Volvo Bus used an electronic mock-up for its new 'environmental concept bus' and greatly reduced design time, using only half the staff of a typical design project. Volvo used ComputerVision's CADDS 5 software system, so that 75 per cent of components were never translated into physical form during the design stage, but in the final assembly each component fitted accurately

Product data management systems • By Andrew Baxter

A rapidly evolving market

Companies are under increasing pressure to shorten design and development cycles

Demand is continuing to grow for product data management (PDM) software systems as more companies realise the benefits they offer. According to CIMdata, the market research company, worldwide sales of PDM software and services will exceed \$800m this year and grow at a compound annual rate of 23 per cent until 2000.

PDM software has been available for about a decade, but its roots extend 15 years earlier to the original MRP (materials resource planning) techniques for manufacturing products efficiently. From MRP evolved engineering or electronic data management (EDM), which uses computer technology to help manage documents, for example those used by engineers in product design.

That, in turn, grew into PDM, which is used to manage, organise and provide instant access to the vast amount of information needed at all stages of product design, development, manufacturing and support.

In the mid-1990s, the PDM market is still a long way from maturity, and the market continues to evolve as manufacturers' requirements change. As Sherpa, one of the biggest PDM software vendors, says, the emergence of the "virtual" or "extended" enterprise makes additional demands on PDM as manufacturers establish closer links with customers, partners and suppliers, and subcontract more elements of the product lifecycle to outside organisations.

To make collaboration work, however, manufacturers need to do more than share data, says Sherpa; they must extend their processes to partners and enable true electronic collaboration. Also, while these trends are making development cycles more complex, companies are under

increasing pressure to shorten those cycles.

Recent new products from the PDM vendors are aimed at addressing some or all of these challenges. Earlier this year, Sherpa launched an enhanced second-generation PDM system called PDMII aimed at helping companies meet demands for a more comprehensive approach to management of data.

It supports the entire product lifecycle, from creating initial concepts through designing, planning and manufacturing to selling and supporting products; manages a wide variety of data types, and has a much wider user base than would be the case in EDM or earlier PDM; there could be thousands of users in the extended

PDM software gives instant access to a vast amount of data at all stages of the production process

enterprise, including various suppliers and partner organisations, at tens of different sites worldwide.

An important feature of PDMII is so-called "object-based application libraries" which are the result of the encoding by Sherpa of its knowledge of PDM processes. Companies will be able to select objects that provide the functions they need and quickly assemble them into specific applications, without having to write custom code to create or connect the objects.

Also this year, Centra Technology introduced Release 3.0 of Centra 3000, its flagship EDM/PDM software suite. Advances in the new version include the introduction of alternative methods of deriving multiple products from a generic design, through a Product Structures facility which Centra says will be particularly use-

ful to manufacturing companies.

Other features include "close-coupled" interfaces with two popular CAD packages, AutoCAD and Pro/Engineer, allowing access to drawings and models to be managed from within Centra 3000 during revision cycles; support for databases distributed over multiple servers; and support for both Windows NT and Windows 95, the Microsoft operating systems.

Meanwhile one of the bigger players in the PDM market, Hewlett-Packard's mechanical design division, has launched HP Precision Engineering (HP PE)/WorkManager for Workgroups, one of the first PDM solutions to be specifically configured for workgroups.

The software is designed to be easily customised and allows all product data to be available to workgroup and team members, facilitating the concurrent engineering process. As well as being designed as an open system, it is fully integrated with HP's P/EMR10 2D design and drafting system and its PE/SolidDesigner 3D solid modelling solution.

Finally, in April, Adra Systems introduced version 4.0 of Matrix, its object-oriented PDM software which features a number of important enhancements on previous versions, aimed at enterprise-wide information management. These include a World Wide Web/Internet enhancement, support for additional platforms, and expanded international support enabled by Sherpa of the system's byte characters found in many Asian languages. It also has several tools to enhance productivity and an expanded developer's toolkit. In the UK, Huntington-based Quorum Data Management is the principle reseller of Matrix.

Contact: Adra Systems, tel US 508 937 3700, fax 508 453 2462; Centra Technology, tel UK (0)1203 537102, fax 537032; CIMdata, tel UK (0)1203 441129, fax 451919; Hewlett-Packard mechanical design division, tel UK (0)1344 362091, fax 362070; Sherpa, tel US 408 433 0455, fax 408 943 9507; ComputerVision, Coventry, tel UK 01203 417718.

Computer-aided production engineering • By Andrew Baxter

How to get the best out of production lines

IT helps to set up machines and give improvements in output of up to 22 per cent

While product design and manufacturing are already heavily computerised, there is an important area in between where IT has not penetrated so deeply - nor are its benefits so well understood.

This is the area called production engineering, preparing and setting up machines to produce the components that have been designed electronically.

"In the other two areas, a lot of money has already been spent, and if you invest further you are only tweaking your performance," says David Blunt. "If you spend money on the area in between, you can have a big impact, as less has been done previously."

Mr Blunt is UK country manager for Israeli-based Tecnomatix Technologies, which claims to be the world leader in the market for computer-aided production engineering (Cape) software. The company, which went public in the US in 1993, had sales last year of \$83.1m, more than half of which were in Europe. Its aim, says marketing director Lee Aines, is to plug the "huge gap" between design and manufacturing by providing IT tools for production and process engineering.

Tecnomatix is probably best known for its Robcad software launched in the early 1980s and widely used in the automotive industry, which works out and simulates how robots will perform a task on the production line, ensuring they do not collide with the product, other

machinery or each other.

A second product, Vallisys, is a quality engineering tool for ensuring that parts are manufactured in accordance with the design. Some of the experience gained in developing these products have been put to good use in creating Exaline, which is designed to enhance the production capabilities of printed circuit board (PCB) assembly machines and lines used widely in the electronics industry.

Exaline, formerly called Paragon, stands for "expert assembly line." Manufacturing PCBs is a highly automated business: robots from a line of different machines, not necessarily from the same manufacturer, pick and place groups of components as the board moves along, with perhaps a handful of components inserted by manual operators at the other end.

Some PCB manufacturers, however, are still using manual methods to work out the best way of doing this for each job - keeping each machine busy, ensuring the robot or the component it is holding do not collide with a component that has already been placed.

Exaline, says Tecnomatix, not only saves time, reducing to perhaps half an hour a laborious trial-and-error task that can take days to complete, but also does it better. This is where high-volume PCB manufacturers can obtain big benefits from the software.

If a board can be produced in 50 seconds rather than 60, the manufacturer is making much better use of its expensive capital equipment. The software will work out, for example, that a second can be saved by turning the board 90 degrees at

one point in the assembly.

"You would not bother with that if you were doing the set-up by hand," says Aines. "but if you cut out a few seconds here and there, it all adds up."

The software works by defining and redesigning PCB assembly lines in an off-line "virtual manufacturing" environment. It takes the PCB design data, automatically separates groups of components for each assembly machine or manual station, balances the workload of machines and stations whose capabilities overlap, then optimises the performance of each machine, using dedicated algorithms (mathematical formulae) and detecting any placement collisions.

Then it graphically simulates the assembly machine and manual station operations, allowing the user to zoom in to areas that need further inspection and get exact cycle times for different parts of the process. Finally, it generates machine programs, set-up instructions and other reports and drawings needed for the manual and automatic assembly operation.

The software has allowed PCB manufacturers to get improvements in output of as much as 22 per cent from their machine lines, although the gains are smaller for the latest state of the art PCB machines. For a high-volume PCB producer, such gains could be very important, while the dramatic reduction in set-up times would be more significant for a more specialist, low-volume supplier.

For obvious reasons, the manufacturers of PCB machines were initially wary of Exaline, as it could be viewed by their customers as an alternative to buying an

extra machine. However, the machine-makers have since realised that, in the long run, a software product that improves their customers' output is useful for them too. A typical Exaline system would cost \$50,000-75,000, which, Blunt admits, is a lot of money for software.

The problem for Tecnomatix, however, is not the cost but that customers will not believe the claims made for the system - for example, that it could in some circumstances pay for itself in five weeks. "Time and again we have to prove ourselves," says Blunt, "but we are now building up lots of references."

Development work on Exaline began in 1989 and the first sales were made two years later. So far, most sales have been in North America, but Tecnomatix is expanding its presence in Europe by opening offices dedicated to selling and supporting Exaline.

These are at Staines in the UK and Munich in Germany, and a French office which will open in Paris soon.

The first generation Exaline software works out how to do a single job on a line of machines, while the second generation - just launched - can work out how a line can handle several different PCB boards at once. The third generation will bring factory planning to the PCB industry, working out the best way for several machine lines to handle dozens of different jobs. Work on that is already under way, says Aines, and it could be ready in a year.

Contact: Tecnomatix Technologies, tel UK (0)1783 896400, fax 896800. Alternatively, email tecneln@scool.com.

Information retrieval: Excalibur software • By Jane Stirling

Frogs have a lot to teach us

Software with the power of pattern recognition is a boost for manufacturers - and politicians

The ability of political parties to excavate information from a database for fast rebuttals can be vital to success in the cut-and-thrust of politics.

An electronic filing system (EFS), dubbed by UK newspapers as New Labour's "key weapon", the Excalibur EFS is no ordinary information retrieval system. Nor are its uses limited to excavating through mountains of information in the battle of party politics.

Excalibur EFS is an off-the-shelf software tool for use across the board, in any company or institution where there is a need to store and retrieve information rapidly, easily and accurately.

Developed by a biologist, John Dove III, Excalibur EFS has interesting origins. The new technology is based on adaptive pattern recognition processing (APRP), which exploits - for example - the way that frogs recognise their food, distinguishing edible fly species from similar ones that are not part of the diet.

APRP allows the rapid automatic indexing of digital data from a variety of sources, including paper, electronic and sound, and is based on conversion of information to binary patterns. In retrieval, EFS searches for a pattern in digital data and not for specific words.

All successful businesses

WE CAN'T SEEM TO RETRIEVE THE INFORMATION RETRIEVAL SYSTEM



ROBIN BEALE

are inundated with information from numerous sources, whether hand-written, word-processed, graphical or e-mail. One such company is Dominick Hunter, the Durham-based international manufacturer of nitrogen gas generators for deep-freezing and high-quality filtration, separation and purification products for compressed solids, liquids and gases.

The process division has thousands of stored documents relating to every conceivable aspect of company business, including test reports, customer-trial information, correspondence, purchase orders, requisitions and design drawings.

Time saved

According to Sharon Pringle, who has managed the installation of Excalibur at Dominick Hunter, "actually getting hold of a document could take anywhere from 15 to two weeks. Now, with Excalibur EFS up and running, it takes a matter of seconds every time".

The needs of the process division were simple - a "paperless office" with fast and accurate information

retrieval. Excalibur EFS provided a simple and effective answer.

The difficulty in retrieving information on past projects was costing Dominick Hunter time and money. New proposals for potential customers had to be started from square one, instead of re-using relevant information from earlier projects.

The ability to locate documents quickly and accurately was an option that would greatly reduce time to market and increase customer satisfaction through improved efficiency.

Previously, the director of group information services, Joe Witherspoon, had explored using a high-tech database with keywords as a means of retrieval, but all such traditional document retrieval systems have problems. With keywording, information that becomes relevant at a later stage, may be lost.

Subjective choice of the keyword, or its misspelling, can lead to further information loss and the need to index information requires a substantial input of time by a person with sufficient understanding of company business to assess the relevance of each

document and the key words within them. Change of staff within a company can lead to the loss of the keywords themselves and with them access to valuable documentation.

Joe Witherspoon was impressed when he saw the capabilities of Excalibur EFS. The system eliminates the need for manual indexing, keywording and its associated potential loss of information by automatically indexing every character on every page.

Data can be retrieved simply by keying in significant words and so literally any information in the document can be retrieved.

New feature

Excalibur EFS has one more unique feature in the world of information retrieval systems: until now, optical character recognition (OCR) processing errors have represented one of the most difficult challenges to the successful implementation of document imaging.

The occurrence of such errors are often underestimated and, depending on the quality of the scanned document, as many as one-fifth of all words might contain a character fault. If this includes the keyword, the document is lost. By searching for a digital pattern, Excalibur EFS can retrieve information even though words are misspelled. Termed "the fuzzy search engine", errors as great as "bolsinatorial" can be recognised as "bills of materials" and relevant documents listed.

With a view to the future, the process division intend to utilise Excalibur's newly introduced Retrieval Ware, which will enable its worldwide salesforce to use their laptops to access the Internet to seek and retrieve information via Netscape.

Since installing Excalibur EFS and emptying filing cabinets, the process division at Dominick Hunter has been able to create a lot of premium office space. According to Mr Witherspoon: "Ignoring the time saved in locating information, just getting rid of the paper has justified our expenditure."

The paperless office, hitherto the stuff of dreams, is emerging at last.

CLASS OF ITS OWN

Until now, choosing a portable PC could mean compromising on power and flexibility. Etonex's NB-500/I notebook changes all that. Even the basic specification of the NB-500/I offers PC Pentium power and a colour screen. And its modular design means that despite its small size and light weight, users benefit from a wide range of alternative configurations, including an optional CD-ROM drive. This Notebook has been designed to beat the best in the world, matching the versatility and processing speed of much bigger and heavier machines. Its Pentium processing power, multimedia capabilities, upgradeability and performance certainly puts the NB-500/I in a class of its own.

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The virtual manufacturer . . . By Geoffrey Wheelwright

Retailers are already setting up electronic storefronts that only pass on orders to whichever contracted manufacturing operation they want to supply the goods, using a new system, developed by computer database software giant Oracle, that it is about to embark on a significant new technology trial of an electronic commerce system for the Internet.

Code-named "Project Apollo", the goal is to produce a system that will not only allow customers to buy goods electronically over the World Wide Web, but will also permit retailers to electronically pass on customers' orders to suppliers and then on to whatever company will make delivery of the goods.

According to Mark Jarvis, vice-president of marketing for Oracle's server technologies, the company will start the trials worldwide this summer in conjunction with VeriFone - a global provider of transaction automation and Internet commerce solutions, used to deliver electronic payment services to financial institutions, retail merchants and consumers - as well as government agencies, healthcare providers and benefits recipients.

News of these trials follows hot on heels of an announcement earlier this year about a strategic alliance between Oracle and VeriFone. The companies say the alliance will create an integrated end-to-end Internet payment system that they claim is safe for open electronic commerce.

The system, which is likely to be available by the third quarter of 1996, is intended to allow businesses and consumers around the globe to purchase products and services quickly and securely over the World Wide Web.

The alliance is focusing on combining Oracle's WebServer software with VeriFone's secure payment software, to produce the first payment-enabled WebServer on the market. Oracle and VeriFone say that using this electronic commerce product, merchants, banks and other financial providers would be able to offer an open online payment system to handle Internet transactions.

They also claim that this payment-enabled WebServer would mark the end of window-shopping-only on the Internet. Currently, Web users view an endless variety of products and services offered by vendors around the world - but a consistent and secure payment capability does not exist.

"Internet commerce is at a trickle today, but it will rap-

Coming soon: goods made to order, via the Internet

The 'virtual manufacturer' could soon be an increasingly popular business entity as electronic commerce makes it possible for consumers to buy 'products to order' via the Internet

idly become a torrent once the issue of handling large volumes of transactions is solved," says Dudley Nigg, executive vice president of Wells Fargo Bank, a key customer of both Oracle and VeriFone - and a participant in developing the alliance.

"This announcement paves the way for commerce-enabled business on the Internet. Wells Fargo Bank is looking forward to working with merchants using Oracle WebServer, commerce-enabled by VeriFone payment software."

Oracle and VeriFone intend to integrate VeriFone's Internet payment software with Oracle's WebServer - and they say that it will allow merchants and businesses to accept payments via the Internet from consumers purchasing products or services.

VeriFone and Oracle also intend to incorporate the VeriFone Pay Window software into the Oracle PowerBrowser - an embeddable Web browser - for use by consumers. VeriFone's Pay Window software would provide transaction options, such as different credit cards, and make the Oracle PowerBrowser software more user-friendly without excluding users of third party browsers from the transaction system.

Oracle and VeriFone say they also intend to develop an Oracle/VeriFone Internet Gateway that would be used by financial institutions and related businesses interested in accepting payment transactions over the Internet.

VeriFone will provide the software that offers secure payment-processing solutions, and Oracle will provide the Web server and systems integration services. The companies say that this Oracle/VeriFone Internet Gateway would be designed to support all standard compliant software supplied by Internet Commerce providers, such as the SET standard proposed by MasterCard and Visa.

"This alliance between Oracle and VeriFone is the first to make the Web safe for broad-scale electronic commerce,"

claims Ray Lane, Oracle's president of worldwide operations. "Oracle's WebServer combined with VeriFone's payment processing expertise creates an ideal solution that eliminates concerns about the viability of Internet commerce."

Both companies say they are strongly committed to open solutions and intend to work with existing systems such as credit card transaction protocols and new ones to be developed in the future, such as micro-payments and chip cards.

The companies also insist that they do not intend to

Worldwide trials for Project Apollo, for 'products to order' via the Net, begin this summer

build a proprietary system based on charging vendors or customers per transaction. Instead, they say their aim is to provide the transaction infrastructure and gateway to bring existing electronic payment systems to the Internet.

"Providing our payment technology through Oracle's WebServer moves us toward our goal of making the Internet commerce-ready for the huge volume of transactions we see on the horizon," says Mr Hatim A. Tyahji, chairman, president and chief executive officer of VeriFone.

"We want to repeat in the virtual world what we successfully achieved in the physical world with our point-of-sale systems. We plan to accomplish this by universally installing open and interoperable payment technology that is secure and easy to use."

enabling merchants to use Web servers for Internet credit card processing and automatically to handle authorisation, credits and settlements, and basic payment administrative management.

The enhanced system, for larger and more complex merchant requirements, would include extensive administrative functions such as transaction reporting. VeriFone intends to extend functionality which will allow vendors to add options such as electronic cash, electronic checks, smart cards and debit cards.

The system would integrate Oracle's security technology with VeriFone's secure payment software based on industry standards and *de facto* standards, creating one of the most secure Internet payment products available.

Oracle WebServer 2.0 supports the SSL 2.0 (Secure Sockets Layer) security standard for encrypting data between the Web browser and server. The server also provides basic and digest authentication to prevent unauthorised access to Web server content and integrates with the Oracle's database's security features, which provide the most advanced security available within corporate networks.

Oracle's Secure Network Services incorporates leading encryption capabilities and advanced systems for authenticating users and ensuring data integrity.

Moreover, the software company says it has worked with eight top firewall vendors to pass fully encrypted data through corporate firewalls, providing end-to-end security from Internet to Internet.

Oracle and VeriFone say they expect actively to market their product through the companies' substantial existing sales channels in the US and internationally. Oracle also says it intends to make Internet commerce functionality a feature of Oracle WebServer by packaging VeriFone's virtual point-of-sale technology as "modules for the WebServer."

Oracle is not the only company pioneering such technologies. In late March, network market leader Novell announced that it was licensing technology from Open Market to "enable a new generation of electronic commerce

solutions for intranets and the Internet."

Novell will integrate Open Market's OM-SecureLink technology with NetWare to provide customers with a what the two companies say is a high-performance, cost-effective solution for establishing and maintaining online storefronts and managing electronic transactions on the World Wide Web.

According to Gary Eichhorn, president and chief executive of Open Market, there is a huge demand for this kind of software in corporations - many of which are grappling with the question of just how they will use the Internet/intranet opportunity.

"There has been a transition - starting over the past couple of months - from publishing everything (on the Web) to realizing that it is costing you to do so," he says. "It turns out to be a big cost-centre for lots of people."

Eichhorn says the real opportunity lies not in simply publishing vast amounts of data on corporate Web pages, but on using the Internet and a vehicle for real, live commerce. "With commerce on the Net, the incremental cost of distribution is zero," he suggests. "So it should have a profound impact on cost structures - the Internet will have to be used as an expense and will be something which can get a return."

Motor industry

Simulation solves a problem for Ford

The computer services company, Hoskyns - part of Cap Gemini Segret - and a leader in the IT European outsourcing sector, is also heavily involved in applying virtual reality and simulation techniques in the manufacturing industry.

The company claims to have the largest management science team in Europe - 150 people - following its absorption of operational research staff from British Coal and British Gas.

Cindy Greener, Hoskyns' marketing manager, emphasises that manufacturers are now increasingly aware of the need to apply new methods to the entire supply chain - from production to distribution and marketing - and not, as in the past, isolating sections of the manufacturing process.

As an example of simulation being used to solve production



Cindy Greener has moved from welder and fitter to factory manager and is now a strategic marketer

problems, she refers to a project carried out by Hoskyns last year for Ford, to improve coordination of launches for new cars across Europe.

With cars produced at three assembly plants and sold across 19 countries, via hundreds of dealers, the launch problem was "like solving a multi-dimensional Rubik cube," says Geoffrey Carr, Ford's director of programming and distribution.

Hoskyns used computer-simulation techniques to develop a 'launch machine' to replace a manual process. The system was used for the launch of the new Fiesta and more recently, the new Mondeo.

Mr Carr says the system "gives plans which are significantly superior in matching demand to supply. By automating and speeding up the process, it played a key role in keeping us on schedule."

This integration of manufacturing and marketing reflects Cindy Greener's own career profile: she started work as a welder and fitter - and rose to the position of factory manager - before taking her MBA degree and switching to a career in strategic marketing.



Brokers on the Frankfurt Bourse. In a quote-driven system, market makers must advertise flood prices on the quote management system, available simultaneously to all users. Brokers then telephone to trade.

Pan-European stock exchange developments . . . By Niala Moran

Easdaq opts for IT outsourcing

More than three dozen investment banks and broker/dealers have so far said they will operate on Easdaq, the European Association of Securities Dealers Automated Quotation system, regulated by the Belgian banking authorities

Deep in London's Docklands, the computer systems for a new stock exchange are under development. But instead of armies of analysts and programmers and resources of tens of millions of pounds, Easdaq, the pan-European exchange - which is due to open in September - has one freelancer and a tiny budget.

Rather than setting up and running its own systems, Easdaq has opted to outsource both development and operations - "we are not financed for the indulgence of build-your-own systems," says Mick Newman, who is managing the project.

In the 1980s, Mr Newman was architect of the London Stock Exchange's Topic information system, and Seag, the first automatic quotation system in the world.

"When I look back - when Topic and Seag were built, there was no choice but to do-it-yourself," he observes. "But the IT industry has now matured, and there is a wide range of technology and services to choose from."

Easdaq, the European Association of Securities Dealers Automated Quotation, will piggy-back the Eurobond dealing system operated by ISMA (International Securities Market Association), and the cross-border settlement system, InterSettle, run by a consortium of Swiss banks.

Mr Newman is in discussion with information providers such as Reuters, Teletext and Bloomberg, on disseminating price and company information from Easdaq, to investors.

The new exchange, modelled on the US market Nasdaq, will specialise in small, fast-growing, and particularly technology-based companies. Such companies find it hard to meet listing rules of Europe's main national stock exchanges, for example, having traded for three years, or being in profit.

More than three dozen investment banks and broker/dealers have so far said they will operate on Easdaq. The exchange hopes to list about 50 companies in its first year, starting by giving dual listing to 20 or so European companies that are already traded on Nasdaq.

Easdaq is an independent company with more than 40 shareholders - investment banks, stock brokers and venture capitalists - from around Europe and the US.

While it is independent of any European exchange, Easdaq has developed a close relationship with its US counterpart Nasdaq, which is a shareholder. It is also expected that some US companies listed on Nasdaq will list on Easdaq as well.

Having ruled out developing its own system on the grounds of cost and time-scale, Easdaq considered three options:

- Constructing a system from standard off the shelf elements;
- Copying an existing system;
- Or forging an alliance with another stock exchange.

The first two options were rejected because of the amount of modification any off the shelf or existing system would have required.

A strategic alliance with another stock exchange was ruled out as being too complicated. However, ISMA stood out as a potential partner, because its system provides trade matching, a crucial requirement as the Easdaq screen-based system will be quote driven. ISMA has agreed to develop and operate a quotation system for Easdaq, which sit on top ISMA's Trax trading system.

At the same time, the real-time trade confirmation and reporting systems within Trax



IT skills and outsourcing

Focus on applications in the financial sector

will be enhanced to match Easdaq's regulatory requirements. Market-makers and brokers on Easdaq will have to be wired into the Trax network, and to install the Trax software, which will run on any workstation capable of running Microsoft's Windows NT operating system.

In a quote-driven system, market makers must advertise fixed prices on the quote management system; these are all available simultaneously to anyone using the system. Brokers then telephone to trade. Both parties send details of their transaction to the trade reporting system, which matches up the two reports and forwards them for settlement. The quote management system will feed prices to investors via information providers such as Reuters or Teletext.

On Easdaq's behalf, the existing network will be extended to bring in brokers and market makers from the US, and other parts of Europe, such as Scandinavia and Spain and Portugal, that are not covered presently by ISMA.

Work is progressing by ISMA and InterSettle to make the connection between their networks to allow information on trades to be forwarded to the InterSettle computer, based in Zurich. The settlement system will reinforce the telephone trade, advising brokers when a trade will be settled, and what it will cost.

In the absence of a single European currency, Easdaq will allow all European currencies and US dollars to be used within the system.

The InterSettle system is capable of settling any trades that take place before 1400 hours, on the same day.

Although Mr Newman said this would be important in competitive positioning, Easdaq will initially opt for three-day settlement. All transactions will then be stored in a database, which ISMA is also setting up, for record-keeping and archiving.

The headquarters of Easdaq is in Brussels, and the exchange will be regulated by the Belgian banking authorities. Information from the database will be used to demonstrate compliance "obviously, we will also collaborate with any authority, for example, the US Securities and Exchange Commission if they request information on any brokers or market makers," says Mr Newman.

The database will also feed the only element of the system that Easdaq plans to develop and operate itself, the market surveillance system to enable it to ensure that the market is operating correctly.

Mr Newman is now bringing together a handful of participants: market-makers, brokers, information providers and investors, to trial the system and get an understanding of the training and installation requirements.

At the moment, the paucity of research and analysis on small, high-growth companies in Europe creates a barrier for would-be investors. One of the keys to Easdaq's success will be to encourage analyst coverage. Easdaq intends to outsource the dissemination of such information, and to set up a channel for listed companies to publicise their reports. Companies will be required to file quarterly.

Easdaq does not say how much it is spending on its computer systems. But it has said it needs Ecu 10m (£7.5m), to finance all activities for the next four years when, according to the business plan, the exchange will move into profit. Compare this figure to the £50m or so the London Stock Exchange is estimated to have poured into the failed Taurus computer project, and - as Mr Newman says - building your own system does indeed look like an indulgence.

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Software at work

Management overview

Don't put your profits at risk

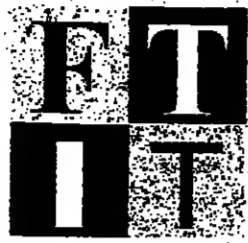
Risk assessment software is not merely for big financial institutions. Organisations of all sizes should be using it, argues Rod Newing

Risk analysis is "one of the elements by which the natural uncertainties in human life are adequately modelled," says Grenville Coll, a decision-support consultant.

"Management has spent the last ten years getting to grips with spreadsheets and how to use them in business. During the next ten years they will learn how to incorporate uncertainty into their models and improve them as a result."

The financial losses at Barings and Daiwa have shown that even large institutions have had inadequate risk management systems and they are now giving it a high priority. However, the need for software to provide risk analysis and management applies to all organisations.

Most management decisions are taken on the basis of a single anticipated outcome, whether a discounted cash flow, pay-back or forecast. Managers have become used to spreadsheets and their ability to provide a single line forecast from a number of different variables. However, there is always a degree of uncertainty about the outcome, called "risk". There is always a chance of an unanticipated outcome which carries a financial loss, which would not be reflected in the forecast. "Failure to acknowledge the existence of



Software at Work

RISK MANAGEMENT SYSTEMS: Now one of the fastest-growing segments of IT-spending in the financial world

uncertainty is one of the reasons why major projects are late, over-budget or desperately hard work," says Mr Coll. To make more informed decisions, managers need to know both the probability of an outcome and the extent of any associated loss. Having made the decision, managers are then able to take steps to reduce the probability of loss and control their exposure to it. Risk assessment



A tightrope walk that failed: in 1971, near London's Tower Bridge, Cologne 'spider man' Franz Joseph Burbach, hoping to raise funds for charity, dropped his damaged balancing pole and decided to crawl across, but then fell into the Thames, half way over. In the financial world, uncertainty over risk is one of the reasons why significant projects are late, over-budget or sheer hard work

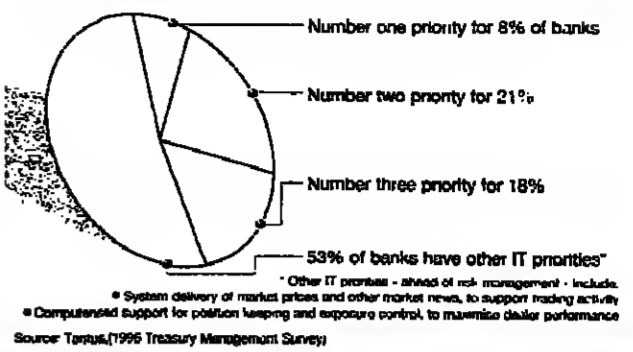
software handles all the complex calculations required to calculate the range of possible outcomes. Software packages use a series of different techniques, including Monte Carlo analysis, which calculates a large volume of random outcomes. Latin Hypercube, which calculates relationships between variables, deterministic formulae, which are repeatedly applied to individual values

and qualitative tools, often based on questionnaires. The entry cost of risk assessment software, either as a spreadsheet add-in or a stand-alone package, starts at about \$500. Crystal Ball, @Risk and Predict are popular easy to use packages which are suitable for managers, project managers, accountants and other non-technical end users. However, PA Consulting's Colin Hatfield warns that "risk

software does not currently support pro-active risk management after it has been assessed". There are a number of small specialist risk management consultancy companies. Because of the specialist nature of the market, several of them either import suitable software or have written their own, although they all use another package if it is more appropriate. At the higher end, global financial institutions can easily spend from \$20m up to as much as \$100m. At this level, the software only represents about ten percent of the cost, with the rest being taken up with integration. The top-end software vendors are producing cut-down versions of their software for non-financial markets.

Risk analysis is required during the bid and execution phases of all significant defence and most of the larger civilian construction projects. "Suppliers have to include a risk assessment in their bids, which would be continued as part of the project," says Andy Carty, head of information management at the UK Government Central Computer and Telecommunications Agency. "Departments usually do their own independent risk assessment and, for software, we refer them to the Association of Project Managers."

Risk Management as a 'top three' IT priority



Back to face the music: former Barings securities trader Nick Leeson, bites his lip as he is escorted from Singapore Changi Airport. He is now serving a six-and-a-half year sentence

limited value in the real world," warns Ken Newland, managing director of Quintec Associates, who is also chairman of the Association of Project Managers Specific Interest Group for Risk. "Ninety percent of the value of software lies in communicating ideas. The numerical approach can suffer from 'garbage in, gospel out,' so it is best used in support of one of the better qualitative software packages, which can capture the thinking processes."

Used properly, risk analysis software will alert and educate managers to the risks involved, and allow them to make better decisions and control the subsequent risk. "If you can manage your risk, you conserve capital with which to expand and grow," says Mr Taylor. "Good risk management practices stabilise returns and go straight to shareholder value."

Portfolio management • By George Black

Financial risk dominated the headlines early last year, following the collapse of Barings Bank, but today market risk and credit risk remain much bigger concerns for most financial firms.

Credit risk has become less important than market risk in the City of London since the Big Bang of 1986 broadened the activities of most of the larger financial institutions, but it remains a substantial area of concern. While City banks inevitably focus keenly on the financial problems of large international projects, such as the Channel Tunnel, they are also keenly involved with troubles on a smaller scale: for example, the UK's clearing banks are increasingly worried by the number of struggling, medium-sized businesses. The banks are boosting their efforts to tackle potential bad debts. A group of national reserve banks recently issued a reminder about the need to control credit tightly.

Joint project

In response to this situation, the UK merchant bank Kleinwort Benson, part of the German Dresdner Bank, last year introduced a system to provide a consolidated view of its exposure in loans. A software system, called Cobra Limits, was jointly developed by the bank with CMG (Computer Management Group), the London-based systems company which

The benefits of a consolidated view

How software helps Kleinwort Benson, the merchant bank, curb credit risks

Kleinwort Benson floated on the stock market. The two have worked together for several years.

The bank looked for a software package to improve the level of management information on lending, as well as to strengthen its reporting capabilities. Not finding anything suitable, it went into partnership with CMG to develop the software. It was spurred by the need to comply with more stringent Bank of England reporting requirements following the European Union's Capital Adequacy Directive, which came into force at the beginning of this year.

But more important, according to Mr Alan Craft, chief credit officer and a director of the bank, was the facility to manage the lending portfolio effectively from a single database. This would serve both to control serious risks and to assist marketing to those clients who might safely be encouraged to borrow more.

The system uses an Oracle database and a Business Objects query tool. Mr Craft says the new system is far easier for those who are not a

computer specialists, than the nine year-old system (developed in-house), which it replaced.

"We are starting to see the benefits now, though there are still problems to be sorted out," he says. "It is already much easier and quicker to



Alan Craft, chief credit officer: portfolio reports are now available far more easily easily

get the reports you want. "Most of all, it has raised the awareness of the issue of portfolio management."

However, he sees it as only one step along a long road towards creating ideal systems. Having learnt how to model the lending portfolio in various scenarios, the bank plans to link the system to a market risk system to gain an overall view of its risk position.

"Few, if any, institutions have a complete picture," Mr Craft notes. The larger US banks are probably furthest advanced in this direction, but even they do not yet have all the answers.

Applications

Eventually it may be possible for the bank to convert its risk management systems to real-time operation, cutting out even the minimal delays which occur at present. That move will depend whether the bank is willing to invest heavily in upgrading systems. Although the Cobra Limits software was developed for Kleinwort Benson, it is broadly applicable to most lenders. CMG aims to market it as a package.

Charity application • By Rod Newing

Reassurance for supporters

A charity has used risk analysis software to ensure that an important project can be successfully funded, built and operated

SeeABILITY, previously known as the Royal School for the Blind, is raising £2.25m to build a centre to care for young people with juvenile Batten's Disease. This genetic disorder leaves sufferers blind by the age of 12, with decreasing physical ability, a short life expectancy but normal mental ability. There are no specialist facilities available in the UK for those beyond the age of 19 and the charity's new centre will provide both care and the stimulation which sufferers need and deserve.

"One of the parents who is helping with the project works at the Ministry of Defence," says David Ireland, SeeABILITY's Appeals Director. "He suggested that risk analysis would help us to present our case to potential supporters. We were introduced to HVR Consulting Services, a manage-

ment consultancy with a risk practice, who offered their services and software without charge as their contribution to the project."

"It was an interesting exercise," recalls Robert Perkins, SeeABILITY's chief executive. "HVR helped us to brainstorm the potential risks as a group. They also met with us individually and with several of our trustees and our outside project manager."

"We assessed a number of factors in terms of their probability and possible impact on timescale, capital cost and operating costs."

"We also looked at factors such as our reliance on key staff, finding a suitable site, providing a marketable service, the possibility of competing appeals in similar areas and the failure to find an effective appeals committee or even the loss of our marvellous Patron, the Princess of Wales."

Potential risks

The output from these sessions was entered into the Risk Evaluation and Management Information System ("Remis"). This is HVR's qualitative tool which is based on Microsoft's Access database. The software

captures details of the various potential risks and uses probability weightings to assess the relative importance of each.

"The software ranked the risks, which is an exercise that we couldn't have carried out," admits Mr Perkins. Remis also categorises risks by type, to identify common sources of risk. Detailed calculations are carried out using a specialist quantitative risk assessment package, such as @RISK or Monte Carlo.

Remis automatically produces a risk register and management summary. "The risk register is a running document which I keep by me," says Mr Perkins. "I use it from time to time as a check to monitor the project as it progresses. The study identifies the period of the appeal for which a particular risk is current and allocates responsibility for each to a manager. We can see when a risk has passed and when we are entering a critical phase."

"The exercise was extremely useful," says Mr Perkins. "Although it didn't pick up anything significant that we hadn't identified ourselves, it was reassuring to find that a highly professional and sophisticated approach has largely

confirmed the points we had already identified."

Using risk techniques in association with the specialist software gave the charity a powerful tool to reassure its existing and potential supporters and financial backers.

Expertise

"We can show that we understand the areas of risk associated with such an important project and that measures have been put in place to minimise both their probability and their impact," says Mr Perkins.

As a charity with expertise in the areas of visual impairment and multiple disability, the group, he adds, "is faced with a clear responsibility to those suffering from juvenile Batten's Disease and their families. There's no alternative - we must take every step to ensure that the centre does not fail."

For more details about SeeABILITY, telephone 01372 373086, fax 01372 361508.

Next month's software theme in the FT-IT review, published on July 3, will look at Internet software tools.

The September 4 issue will feature developments in accountancy packages.



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■ Exhibition scene • By Rod Newing

Small is beautiful when it comes to selling software

Both software buyers and vendors are looking for a sound business proposition when they attend a software event. Hugh Keeble explains why he believes 'Softworld' and 'SoftEx' events give visitors what big shows cannot provide

Events must be an information service for attendees, "not an annual jamboree for the industry," says Hugh Keeble, founder of the Interactive Group, which organises a series of software events.

"You have to get the fundamental proposition right. Major exhibitions are often organised at the convenience of vendors and the organisers, not for end-users or software specifiers."

Mr Keeble used to be the director responsible for the now defunct *Which Computer?* Show, the biggest IT event ever to be staged in the UK. It was half as big again as Networks, currently the UK's largest IT exhibition.

"An estimated 88 per cent of attendees at major computer shows were looking for application software, but an exhibition is not the best environment for selling software. You need to spend time with a specialist marketing person, but they are never available. Software is a complex product, whereas an exhibition is a five minute lead-taking exercise, so 90 per cent of attendees didn't find what they were looking for."

The *Which Computer?* show was launched in 1984, at about the same time as the IBM PC. "It was a very successful flag-waving exercise for the IT industry in UK," recalls Mr Keeble. "Vendors took the view that the size of their stand was a reflection of their UK market share - and marketing managers were under pressure to build the biggest and the best stand."

This, he adds, was acceptable when the margins on PCs were "incredibly high, but the clone market took off and PC prices came down. Marketing man-



Keeble: "Software events must be more innovative"

ers were asked to justify their investment in the stand, so four or five major vendors dropped out and the whole show collapsed. I believe that the Networks show will go through the same experience."

Mr Keeble proposed a series of small focused software shows to Reed Exhibitions, but they were not interested because their strategy was to concentrate on large market-leading events. Together with Mark Steel, another Reed director, he left to set up the Interactive Group. Their mission was to provide software selection services which would assist groups of people in an organisation to buy serious business applications.

"We created the Softworld series to provide an environment in which a team, often consisting of the financial director, IT director and end-user department head, can identify suitable products in advance, review them in a time efficient way and come to a final shortlist of one or two vendors," Mr Keeble explains. The vendors have small standard exhibition stands and seminar rooms in which they can present their product on the hour, every hour. Attendees are given a directory containing detailed market research and factual information about both vendors and their products.

Exhibition space is traditionally sold through brochures, but interactive used direct selling. "We had a 95 per cent conversion rate because the vendors understood what we were trying to achieve," says Mr Keeble. "We didn't try to sell them additional services, such as PR and corporate image, but concentrated on sales opportunities. We took away the large stands and created a level

playing field. This encouraged smaller vendors with good products who had dropped out of the *Which Computer?* show because they couldn't compete on budget."

By offering a return on investment, "we woo the hearts and budgets of vendors. Participation may only cost £4,000 and companies such as Oracle can present to 400 people, which is a good business proposition. All our vendors are coming back because they are getting most of their business from our events, which now become their main marketing tool. We also had an incredibly positive reaction from users, with 87 per cent attending seminars and 92 per cent rating the directories as good or excellent."

UK attendances grew quickly, but soon stabilised at about 3,000 per event, so Interactive expanded into the US in 1993 under the 'SoftEx' brand. "It is like the UK market ten years ago, with several big broad-based shows, but nobody was offering the opportunity to review software. We leveraged our UK vendor contacts and arrived in the US with a list of UK colleagues who would act as references."

Mr Keeble finds that US executives are better event attendees than the British: "Most of them arrive the night before and stay at the venue to attend both days. You have to be committed to sit through three or four presentations when there are no freebies, no gifts and no glamour. It is very workmanlike. They are more sophisticated in understanding what software can deliver and selling software is easier because BPR and IT are an

accepted part of their culture." The regionality of the US market offers a huge potential to organisers who can stage events on both the east and west coasts, as well as central US. "The resource drain of setting up events from scratch is massive and we are the only UK organiser to do it successfully in US. It is an achievement we are proud of," he adds.

Mr Keeble sees the Interactive Group as becoming the leading global provider of information in all media to software buyers. He wants to give detailed information on software purchases in a time-effective and conducive environment - "our directories, which are sold to ooo-attendees, now account for 20 per cent of the business our vendors get. It is the reference manual for the market". He is defensive when it is suggested that he has changed the shape of IT events in the UK, where software presentations have now become an established

International software events

The Interactive Group launched the Softworld series of events in the UK in 1991. It includes Sales and Marketing, Accounting and Finance, Human Resources and Supply Chain Management.

Interactive also organises DBWorld, SoftDev, WebDev, Java Developers Academy, Intranet 97, Delphi Developers Academy and Microsoft's Visual Developers Academy.

In the US, the SoftEx series cover similar subjects as Softworld and are based on the east and west coasts, as well as Chicago.

Interactive is now in the process of franchising Softworld in Europe and the Far East. Interactive currently organises 17 software buying events, 23 Masterclasses, 5 conferences and 14 research reports and directories, on paper and CD-ROM.

An software information service is being constructed at <http://www.softinfo.com>.

Interactive Group, tel: 44 (0)181 540 5040 or softworld@softinfo.com

'The exhibition market, in general, must change'

part of the timetable.

"There is a fundamental cultural difference between us and other event organisers," he explains. "We are offering the best environment, which is why whole teams attend. Others are adding seminars to exhibitions with large stands and are not focused on offering a proposition to attendees, so their proposition is still an exhibition. Our seminar pre-booking service gives the proposition that we won't waste attendees time."

Commenting on the recent Comdex exhibition in London with the far larger Comdex event in the US, he says: "Comdex in Las Vegas is a one-time/one-place proposition to attendees. It attracts a worldwide attendance because it provides a worldwide stage for product launches, announcements and innovations. Attendees expect the same experience in the UK, but it is impossible to deliver it locally, so their proposition at local level is flawed. However, they did make a big effort and investment."

The exhibition market, in general, must change, Mr Keeble believes. "The industry has the reputation of being a parasite. Vendors have to be there because their competitors are there. All too often organisers have launched exhibitions by choosing a banner and simply asking vendors to stand under it, without considering the fundamental proposition to the potential attendee."

The whole market should be more sophisticated and services should be provided 365 days a year. New electronic methods such as the World Wide Web and CD-Roms pose a fundamental threat to the industry because they provide detailed product information to people's desks.

"Events must be designed with the attendee in mind, not the vendor. We are trying to retain the face-to-face contact at our events, because buyers react to the vendors as people, but there is a balance. The event industry must lead and innovate, just as the software market does."



As businesses increasingly depend on IT systems, Dr Geoff Robinson, right, president of the British Computer Society, says IT staff need to be more involved with professional bodies



■ IT staff recruitment • By John Kavanagh

Risk factor sparks a keener interest in IT qualifications

Business insurers are now looking for proven competence of IT staff when assessing risks and considering cover for industry and commerce

When the ability to get business insurance cover starts depending on the proven quality of IT staff, it is clear that formal qualifications are becoming rather more than just paper certificates.

This is just one of several developments in the last six months which have brought new interest in qualifications from both companies and individuals and sparked off hectic activity among professional bodies and training companies to accommodate the demand.

The biggest practical impetus for companies could be the action of an insurance broker, which wishes to remain unnamed for now, in reviewing its procedures for assessing risk on installations such as oil rigs and industrial plants. As part of this review it has been looking at examining the qualifications and quality of the IT staff developing the systems which control such plant.

Mr Philip Virgo, an independent consultant who was approached by the broker for advice, says others are taking a close interest in the development.

"If insurance companies start taking this line on safety-critical systems, the whole attitude towards qualifications and professional bodies could change," says Mr Virgo. "They might start looking at the definition of a critical system: could it include certain business systems? Insurers might start looking at IT staff competence when considering cover against fraud, for example."

Other pressures are also at work here. The Health and Safety Executive is funding research to formally define the skills needed by staff developing safety-critical systems. The project is being managed by

two professional bodies, the Institution of Electrical Engineers and the British Computer Society. They say there is a "widely perceived need for a single coherent scheme of wide application".

This statement has some justification: more than 40 organisations showed interest when the two bodies invited bids for the contract to draw up detailed lists of skills.

Qualifications are already an immediately pressing concern for some. The Insurance Group, General Accident, has told its 300 IT staff that promotion will depend on professional qualifications after 1998.

This new policy is part of the drive by the insurance industry as a whole to promote professionalism, under pressure from regulatory bodies. General Accident says the move is "part of a company-wide commitment to developing employees skills and organisational professionalism".

is not openly going as far as General Accident in tying qualifications to promotion but, even so, it does say its own diploma and advanced diploma in IT are "part of a drive for more structured recruitment, development and career planning, and a framework for personal development".

The diploma scheme has been put together by the NHS Information Management Group, the Training Division, the Open University and the Association for Health IT Specialists, a staff representative group. More than 5,000 staff are being encouraged to work for the diplomas, which are at second-year and third-year undergraduate level. There is no course or examination; candidates compile evidence and have an interview to show they have reached specified standards in areas ranging from IT to change management and personal skills.

Such developments are coming at a time when companies are using the experiences of the recession to move increasingly to flexible employment methods, such as fixed-term contracts, getting employees to take responsibility for their own career development, and bringing in contract staff for system projects rather than recruiting permanent people.

These trends mean that both individuals and employers need to get more involved with professional bodies, according to Dr Geoff Robinson, director of IBM's Hursley Research Laboratory and president of the British Computer Society.

"IT professionals are now realising the benefits of transferable skills and professional qualifications," he says. "In accounting and law, this has been the pattern for years and it is becoming increasingly relevant in IT, where the idea of

lifetime employment is now perhaps behind us.

Dr Robinson says employers should encourage their staff to become involved with a professional body, for the good of all: "Employers, too, need transferable skills, and external qualifications can play a large part in their skills armoury."

The society is making it simpler for experienced people to achieve its professional grades; this and other efforts have brought a rare net increase in membership from 34,000 to 35,000 in the last year. Even so, it still represents only around 10-15 per cent of IT staff. The Institute of Data Processing Management has 10,000 members; some belong to both bodies.

There is a historical image problem here, according to Dr John Elmore, IT director at ICL and chairman of a project at the Institution of Electrical Engineers (IEE) aimed at finding out what IT people want.

The IEE has surveyed 1,500 IT specialists and found that they want to be seen as professionals and want standards, codes of practice and formal ways to keep their knowledge up to date.

But Dr Elmore says they also see the professional bodies as too academic and insisting on engineering degrees. The IEE is now looking at ways to overcome the perception problems and build on the new desire among staff to be seen and to behave as professionals. The British Computer Society is in touch with this activity.

The time is certainly right for such work, for the developments of the last six months suggest that individuals' career prospects and even business survival will increasingly depend on IT qualifications.

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 Fax: 0114 282 1340
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Geographical Coverage International

Manufacturing	Local Government	Logistics and Distribution
Processing Industry	Schools & Colleges	Hotels
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Finance and Distribution	Airports	Production Monitoring
Printing Industry	Financial Management	Insurance
Media Industry	Healthcare	Police & Security
Credit Management & Collections	Multimedia & CBT Training	Document Image Processing

SANDERSON COMPUTERS

3 Global Business Systems
 TIS Software Ltd, Regatta Place, Marlow Rd, Bourne End, Bucks SL8 5TD
 Tel: 01628 529565 Fax: 01628 532514

Company Description
 Global 3000 business management systems combine highly functional standard modules with ease of use, complete flexibility and straightforward integration with industry-standard office automation tools. Over 25,000 companies worldwide use Global to gain and build on competitive advantage.

Hardware
 Unix, Novell, Windows NT

Geographical Coverage
 Worldwide

Applications
 Integrated ledgers, stock/order processing, manufacturing and industry-specific

4 Software Architects Int'l Ltd
 Enterprise House
 The National Technological Park, Limerick
 Tel: 00353 81 338 118 ext. 4104

Company Description
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Hardware
 AS/400 & Client Server

Geographical Coverage
 Global

Applications
 BPCS™, Software 2000™, Hoskyns Financials™

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- 6-13 Air Conditioning

6 Fujitsu General (U.K.) Co. Ltd.
 154 Great North Road, Hatfield, Herts. AL9 5JN

**Getting fresh air indoors...
is a breeze**

If you think air-conditioning is an expensive luxury or a long and complicated process to install, then you obviously haven't been introduced to Fujitsu's new 45,000 BTU/h cassette unit.

The 45,000 BTU/h fits unobtrusively into any false ceiling and features knock out panels that can provide fresh or recycled air to even the furthest corners of a building. This means that additional rooms may be linked to the system. It also features a 3 phase operation with reverse cycle heating options.

But the 45,000 BTU/h is just one of a wide range of air conditioners from Fujitsu. As well as cassette units they include floor standing and wall, window or ceiling mounted models, all of them neat, unobtrusive and stylish. They feature a whole host of technological innovations such as infra-red remote controls, a super quiet action and a unique multi-directional air flow adjustment system which ensures an even distribution of air in every direction. There is also a choice between units which supply cool air and those which offer both cooling and heating options.

If you'd like to know just how much of breeze it is to get fresh air indoors, telephone 01707 272841, Fax 01707 273111 or write to the address above.

FUJITSU

14 J D Edwards (UK) Ltd
 Oxford Road, Stokenchurch, High Wycombe
 Buckinghamshire HP14 3AD
 Tel: 01494 682700 Fax: 01494 682699

J D Edwards & Company is the industry leader in supplying application software and solutions for the IBM AS/400 market. Developed using CASE tools, J D Edwards is currently developing a new generation of software products, which will operate on a variety of platforms.

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JDEdwards

- 14-15 Application Software

15 Result 2000 Ptc
 Unit A5, Old Power Way
 Lowfields Business Park, Eiland, W Yorkshire
 Tel: 01422 374473 Fax: 01422 370030

RESULT 2000 established as industry leader for plant, tool and equipment hire solutions, is now offering its Resultware packages for all leasing / rental markets. With multi-currency and multi-lingual capability and an open integration policy, it can provide a global solution.

Hardware/Compatibility
 OPEN RDBMS runs on over 200 hardware platforms

Geographical Coverage
 Packages for large and small users throughout the UK

Applications
 Hire, Rental, and Lease markets

Cost
 Entry level from £25,000

result

- 16-17 Application Software
- 18 Automatic, Off-site, Back-up
- 19 Bar Coding
- 20 Bureau Scanning Services

16 Softworld in Accounting & Finance Roadshow
 June 11th 1996, Glasgow Hilton Hotel
 Tel: 0181 5414865 Fax: 0181 9745188
 E-Mail: softworld@softinfo.com

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17 Softworld for the Supply Chain
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Secure Backup Systems

19 KTP Applied Bar Code Technology
 Waltham House, Riverview Road
 Beverley, East Yorkshire, HU17 8DY
 Tel: 01482 867321 Fax: 01482 882712

Bar coding can make every business more efficient. KTP supplies Bar Code technology including printers, labels, scanners, portable terminals, connectivity tools, software and quality control equipment.

In addition to total solutions KTP is a stocking distributor supplying peripherals to systems integrators operating in complementary vertical markets.

Geographical Coverage:
 United Kingdom

KTP

20 Datascan Limited
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 Tel: 01543 462978 Fax: 01543 462590

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Hardware/Compatibility: Images available in all Formats

Geographical Coverage: Nationwide

Applications: All Document Management and CAD Applications

Cost: Prices from as little as 4p per page

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Hardware/Compatibility
 Cabling for all major systems

Geographical Coverage
 United Kingdom and Europe

Applications
 Across industry and commerce

central data

22 Instagraphic Limited
 Ashfield Industrial Estate, Low Hall Road
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 Web: http://www.lpsys.com

Lincoln Software produce a range of Meta-CASE and CASE tools for large scale three-tier client/server application development. Our Object IE product is an object oriented, full life cycle tool which includes full C++ Code Generation and Database Generation for Oracle, Sybase and Informix. Our tools bridge the gap between business requirements and IT.

Hardware/Compatibility
 Open VMS/Solaris/Sun OS/HP-UX/AXD/Microsoft Windows

Geographical Coverage worldwide

Applications
 IPSYS Toolbuilder, Object IE, HOOD, SSADM

24 Ross Systems (UK) Ltd
 7 Rushmills, Northampton NN4 7YB
 Tel: 01604 30050 Fax: 01604 30495

Company Description
 Ross Systems, Inc. develops and markets a broad range of client / server business solutions, including financials, manufacturing, maintenance, and materials management applications. Products are available for the open systems environments of Digital, HP & IBM and the relational database market of Oracle, Rel, Ingres and Sybase.

Hardware/Compatibility
 Digital, Open VMS and Unix, HP-UX and MPEIX, IBM RS6000 AIX

Geographical Coverage
 56 offices worldwide

Applications
 Finance, Distribution & Process manufacturing

Cost £100k - £1M

25 Lawson Software
 Capital Place, 120 Bath Road
 Hayes, Middlesex UB8 3AN
 Tel: 0181 754 8470 Fax: 0181 754 7766

Company Description
 Lawson Software offers robust, client/server applications with proven business benefits for companies worldwide. Lawson has 20 years of experience in developing business applications, with high-end, corporate functionality. Combining that experience with a unique underlying development technology strategy, Lawson offers future proof solutions offering both high-end functionality and openness and integration to the newest technologies.

Hardware
 AS/400, RS6000, HP9000, DEC Alpha, Sun, Sequent, i6800

Applications
 Accounting, Distribution Management, Materials Management, Lawson Tools and Open Enterprise Desktop

Coverage
 FT 2000

LAWSON

- 26 Client Server Applications
- 27 Computer-based Training Assessment
- 28-29 Computer Networking
- 30-32 Electronic Commerce

26 JBA
 Needles House, Birmingham Road
 Saultrey, Warwickshire B80 7AS
 Tel: 01527 496444 Fax: 01527 496230

Company Description
 The manufacturing modules of System 21 offer a complete solution for hybrid manufacturing methods. System 21 takes a new approach to manufacturing by providing users with the flexibility to choose the most appropriate method for different parts of their business. Process methods can be mixed with true repetitive schedule, discrete and batch methods as needed, helping boost efficiency and increase real productivity.

Hardware: Multi-platform

Geographical Coverage: Worldwide

Applications: Accounting, Customer Service, Distribution & Production with specific software for the Drinks, Apparel & Footwear, Food, Plant, Tool & Equipment hire industries.

Cost: Available on request

JBA

27 InfoSource International
 InfoSource House, 54 Marston Street
 Oxford OX4 1JU, UK
 Telephone: 0800 318823
 Fax: +44(0)1865 726416

Company Description
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Hardware/compatibility
 IBM compatible; Dos 3.3 or Windows 3.1/65 required

Geographical Coverage
 Worldwide sales territories excluding N. America and Asia

Applications: Microsoft & others

Cost: From £150 - £5,000

28 BATM UK Limited
 1 City Business Centre, Chichester, W. Sussex, PO19 2DU
 Tel: 01243 539735 Fax: 01243 539835
 E-mail: cc75@cityscape.co.uk

Company Description
 BATM is a world leading designer and manufacturer of approved connectivity equipment, supplying not only ATM product sets but also Ethernet, Token Ring AS/400 and structured wiring solutions to companies that include IBM, Nokia and Siemens.

Hardware
 AS/400, Token Ring, Ethernet, ATM 155, ATM 622, Sonet ISDN

Coverage
 UK and International

BATM (UK) Limited

30 SAA Consultants
 The Computer Complex
 Somerset Place, Plymouth PL3 4BB
 Tel: 01752 608 000 Fax: 01752 608 838

SAA is a specialist provider of innovative EOI and EC solutions with over 2,000 corporate clients world-wide. The ETS products use an Intelligent Messaging Systems Architecture facilitating concurrent processing of EOI, E-Mail, Fax and non-EDI data. These solutions offer the flexibility and power to meet real business needs.

Hardware Compatibility:
 UNIX, AS/400, OS/2, Windows (NT Gateway, 95 & 3.X)

Geographical Coverage:
 UK, Europe, S. Africa, Far East

Applications:
 EDI & EC products
 - all markets

Cost: On application

SAA

- 31 Computer Networking
- 32 Computer Rentals
- 33 Computer Systems Integration
- 34-35 CTI & Voicemail

31 3Com
 3Com UK Ltd, Pacific House, Third Avenue
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Geographical Coverage:
 Worldwide

Applications:
 All sectors

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32 ACTIX Computer Rentals Ptc
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Hardware
 IBM RS/6000, Bull Escala & Estrella, Motorola, Apple Macintosh and peripherals

Geographical Coverage
 Europe: Sister companies in Paris, Brussels and Frankfurt

Applications
 Peak workloads, benchmarking, development

ACTIX

33 PACIFIC Systems Int. Ptc
 European Headquarters, Kingfisher House
 Frimley Business Park, Frimley, Camberley
 Surrey GU16 5SG Tel: +44(0)1276988800
 Fax: +44(0)127682250

Company Description
 PACIFIC is a computer systems integration company specialising in building and implementing bespoke software solutions across a variety of platforms and industries. We have particular skills in client/server development, workgroup computing, systems integration, networking, facilities management, automated operations, decision support solutions and data warehousing.

Hardware
 AS/400
 PC LANs
 UNIX

Coverage
 International

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- 53 Financial Systems, Reconciliation Systems
- 54 Finance Management
- 55 Internet Business Solutions
- 56-57 Internet - Worldwide Web
- 58 Intranet
- 59-60 IT Services
- 61 IT Services
- 62 Manufacturing Control Software
- 63 Manufacturing, Distribution & Financial Systems
- 64 Manufacturing & Supply Chain Solutions
- 65 Network Connectivity
- 66 Network Security
- 67 Network Systems Integration
- 68 Network Security Solutions
- 69-70 Networking

36 OPEN 4 Systems Ltd
 Amdale House, Otley Rd, Headingley
 Leeds LS6 2JU
 Tel: 0113 274 9990 Fax: 0113 274 9998

Company Description
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37 Fischer International
 6 Beaumont Gate
 Radlett, Herts WD7 7AR
 Tel: 01823 859118 Fax: 01823 859151

Company Description
 Fischer International's SafeBoot/SmartDisk and Watchdog software and token-based security solutions provide high level data protection. Securing both desktop and laptop PCs, they offer a flexible and comprehensive solution to data protection and user management. Also available for integration into bespoke solutions.

Hardware/Compatibility
 Any PC

Coverage
 Worldwide

Cost
 On application



38 RSC - A Storage Tek Company
 Storage Tek House, Woking Business Park
 Albert Drive, Woking GU24 5JY
 Tel: 01483 727331 Fax: 01483 727085

Company Description
 NSC, a Storage Tek company is a leading supplier of enterprise-wide data security products which address:

- External threats to data security from hackers or Internet espionage.
- Internal threats to data privacy.
- Security of dispersed data and data centre data.
- Secure VPN, Closed User Groups and enterprise data backup.

Hardware/Compatibility
 Compatible with all popular WAN, LAN and cable types

Geographical Coverage Worldwide

Applications Data Security applications



39 Team Communications
 Charter House, 13-15 Carteret Street,
 London SW1H 9DJ
 Tel: 0171 799 3082 Fax: 0171 799 3090

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Hardware/Compatibility:
 Multi-Platform, WORM, CD-ROM, Optical Disk.

Geographical Coverage:
 United Kingdom

Cost:
 Solutions from £250 to £1 Million+

41 Perwill EDI

Company Description
 PERWILL EDI, an award winning Electronic Commerce Solution installed in over 60 countries on 6 Continents, is available from its authors in the UK.

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 Fax: +44(0) 1420 545001



42 Open Connect (UK) Ltd
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 Aylesbury HP20 2LL
 Tel: 01296 330771 Fax: 01296 330983

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INTERNET INTEGRATION - Complete service provided from Web Site Design to Hosting Services. Services include Page Access Monitoring, Mail Handling, Ordering Systems and Electronic Catalogues.

Hardware/Compatibility:
 HP5000, RS6000, AS/400, HP3000, WEB Servers, DEC/ALPHA

Geographical Coverage: UK



43 Baan UK Ltd

Baan House, Dearway Technology Centre, Wilmslow Rd, Handforth, Cheshire SK9 3EY
 Tel: 01625 523550 Fax: 01625 523303 E-Mail: sales@baan.co.uk

Company Description
 Baan is a leading provider of open systems, client server based enterprise business applications used by organisations worldwide to manage company resources and co-ordinate enterprise wide functions such as sales forecasting, inventory control, procurement, distribution, transportation, finance and project management. The Baan software family is designed for rapid implementation, easy adaptation and reconfiguration in response to changing organisational needs and technological advances. Currently more than 1,000 customers are using Baan software to manage and re-engineer their businesses around the world. Customers include Boeing, Mercedes Benz, Philips, GEC, Remploy, Crown, Snap-on Tools, Northern Telecom, Honda. Baan employs more than 1,500 people in 59 countries around the world.

Hardware
 UNIX, Windows 95, Windows NT 3.5, HP, IBM, Bull, SUN and other open systems products. Databases supported include: Oracle, Informix, T-base.


Applications
 Baan software is designed for mixed manufacturing environments including make to stock, assemble to order, make to order and engineer to order. On June 4th Baan announced the worldwide availability of Baan Project: one of a number of Supply Chain Programs initiatives supported throughout by the Dynamic Enterprise Modeller. Baan Project provides a completely integrated solution for the management and control

Baan is a leading provider of open systems, client server based enterprise business applications used by organisations worldwide to manage company resources and co-ordinate enterprise wide functions such as sales forecasting, inventory control, procurement, distribution, transportation, finance and project management. The Baan software family is designed for rapid implementation, easy adaptation and reconfiguration in response to changing organisational needs and technological advances. Currently more than 1,000 customers are using Baan software to manage and re-engineer their businesses around the world. Customers include Boeing, Mercedes Benz, Philips, GEC, Remploy, Crown, Snap-on Tools, Northern Telecom, Honda. Baan employs more than 1,500 people in 59 countries around the world.

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of businesses engaged in project related activity. On June 6th Baan UK will launch the latest release known as Baan IV. This release sees the support of process manufacturing covering such functions as; co and by products, yield, assayed items, shelf life, formula management and quality management. Fully integrated with Baan IV is Dynamic Enterprise Modeller. This tool supports the modelling of a customer's business processes and operations including activity mapping. Once defined Baan software automatically configures itself to a customer's business operations. Dynamic Enterprise Modeller comprises business model building blocks supporting graphical, computer based business process mapping at multi level. Organisational components can be defined down to individual activity process steps or tasks. As your business changes you can describe these changes to Dynamic Enterprise Modeller so that it can sympathetically change in accordance with your own changing environment. A number of Baan's implementation partners such as KPMG, Ernst & Young and Origin are actively engaged in developing a comprehensive library of business model templates. Such templates cover aerospace and defence, automotive, food and beverage and large projects based/construction industries. Finally Dynamic Enterprise Modeller underpins Baan's implementation approach in ensuring systems are installed within time scales which ensure you obtain a rapid business return on your investment.



49 Cincom Systems
 89 King Street, Maidenhead
 Berks. SL6 1DP
 Tel: 01628 542302 Fax: 06128 542310
 Email: mholden@cincom.com

Company Description
 Cincom is the leading worldwide supplier of business software and dedicated expertise to companies who manufacture and sell customised products - to order project or contract. We help companies to achieve and maintain global cooperation throughout their operations. From initial prospect enquiry through proposal / quotation, to manufacture, installation and post-sales support.

Geographical Coverage
 Over 60 offices worldwide



50 International Business Systems
 1 Imperial Place, Epsom Way
 Borehamwood, Herts WD6 1JN
 Tel: 0181 2075655 Fax: 0181 2076770

Company Description
 IBS is a wholly owned subsidiary of ISS AB, a Swedish public company and one of the leading software suppliers with over 3000 customers worldwide. The ASW Portfolio is a full range of application software with a GUI interface providing innovative solutions to today's business needs; including Pan European requirements and EuroVAT acting in a true multi currency environment.

Hardware
 AS/400 Client Server, Windows and OS/2 GUI support.

Coverage
 65 Offices in over 30 countries worldwide.

Applications
 Financials, Distribution, Inventory, Asset, Service, Production, Manufacturing, Project, Warehouse Management, EIS and FMCG.



53 Geac Computers Limited
 Hollywood Tower, Hollywood Lane, Cribba
 Causeway, Bristol BS10 7TW
 Tel: 0117 9509003 Fax: 0117 950716

- Integrated client/server Reconciliation and Investigations System for Cash, Securities and FX Conversions
- 24 hours on-line availability
- Workflow
- Supports agency and/or proprietary data formats
- Automatically recognises match exceptions
- Creates investigations cables
- Reconciles holdings or transactions
- Comprehensive MIS

Hardware
 UNIX or NT, HP, IBM RS6000, SUN, Sybase, SQL, Mainframe, UNIX & PCs

Geographical Coverage
 UK, Europe, Far East, Australia, North America

Applications Geac WINNAR

Cost
 Priced on a per concurrent user basis

64 Software 2000 UK
 Crosby House, Meadowbank, Furlong Road,
 Bourne End, Bucks SL8 5AJ
 Tel: 01295 850850 Fax: 01295 850243

Company Description
 Software 2000 offers a comprehensive suite of financial and human resources software designed exclusively for the IBM AS/400 server and related technologies, using client/server and object oriented technologies to provide easy-to-use icon and graphical screens and integration with popular windows spreadsheet and word processing packages and taking into account all the requirements of the multinational corporation. Software 2000 has over 1200 clients worldwide.

Hardware
 IBM AS/400, Server, Client/Server - OS/2, Windows, MAC.

Geographical Coverage
 UK, Ireland, Europe, USA, Australia, Asia, Sth Africa.

Applications
 Totally integrated financial management & human resources

Cost
 Enqy, Level Price £25,000

55 Register your company name on the Internet
 [yourcompany.co.uk]
 £100
 NetBenefit

http://www.domainnames.co.uk/

51 Europe Online
 Kingsgate House, 536 Kings Road,
 London SW10 0TE
 Tel: 0171 447 3400 Fax: 0171 447 3499

Company Description
 Europe Online bridges the gap between conventional online services and the Internet. The Service is designed to provide easy access to E-Mail and discussion groups, entertainment and education, travel and shopping services as well as all the latest news and current affairs from around the world.

Hardware
 Windows 3.1, Windows 95

Coverage
 UK, France, Germany, Luxembourg

Applications
 £3.95 per month for 3 hours



52 IT Southern Limited
 Southern House, Lewes Road,
 Brighton BN1 9PY
 Tel: 01273 600444 Fax: 01273 675299

IT Southern Managed Services
 Partial or Complete IT FM / Outsourcing

On site or remotely, IT Southern provides complete or partial outsourcing of Mainframe, UNIX and/or PC Desktop services and support. IT Southern delivers information technology based business solutions with a clear focus on providing real value for money.

Hardware/Compatibility: ICL, IBM, SUN, Mainframe, UNIX & PCs

Applications: Bespoke of tailored existing applications

Geographical Coverage: Managed Services / Outsourcing and customer support through the UK



56 Industry Connect Ltd
 Skans Bridge Lane, Loxley, Sheffield S6 6SX
 Tel: 0114 2832274 Fax: 0114 2832778 Email: http://www.indconnect.com

Company Description
 Industry Connect is a multi media communications company specialising in providing businesses with a compelling and informative presence on the WorldWide Web. We have experience in the design, creation, maintenance and management of major web sites and virtual business parks. At Industry Connect we understand the technology and will remove the jargon. Our service will quickly introduce your organisation to this exciting new communication technology cost effectively whilst tailoring the benefits to your own particular needs. Combining years of successful international sales and marketing experience our experts are committed to delivering a digital solution to suit your requirements. Our services include:

- Concept Design - Create and maintain an interactive WorldWide Web site
- Incorporate the use of: Creative Graphics Interactive Forms & CGI Scripting Sound Video
- Intranet (Internal Communications Technology)
- Internet Consultancy

Geographical Coverage Worldwide

Applications
 • Customer Service & Support • Sales & Marketing • Information Dissemination
 • Sales Promotion • Commercial Transactions • Mail Order



59 BUILDING CORPORATE PARTNERSHIPS

Call our sales hotline now
 Tel: +44 (0) 171 608 3120
 Fax: +44 (0) 171 608 3091

60 National Computing Centre
 Oxford House, Oxford Road,
 Manchester M1 7ED
 Tel: 0161 242 2200 Fax: 0161 242 2400
 Email: Liz.James@ncc.co.uk
 Internet: http://www.ncc.co.uk

Company Description
 NCC is the UK's leading independent IT user member organisation and an international provider of consultancy and training services, educational and telecommunications products. Members can benefit from substantial discounts on NCC products and services and gain access to regularly updated information sources.

Hardware
 Worldwide

Geographical Coverage
 Available on request



51 Origin
 420-430 London Road, Croydon,
 Surrey CR9 3OR
 Tel: 0181 565 1234 Fax: 0181 781 8013

Company Description
 Origin is a global provider of a full range of I.T. Services; it delivers technology based solutions to business needs through local centres of excellence to ensure a highly responsive and flexible service which draws on the vast experience of a network of 11,000+ professionals across 27 countries. This breadth of support covers a range of capabilities and a proven track record from defining I.T. Strategy through to Systems Development and Implementation, Systems Management, Enterprise-wide Package Implementation and the Development of Software for in-product applications.

Geographical Coverage
 Nationwide/Worldwide



62 Fourth Shift UK Limited
 10/11 Magellan Terrace, Gatwick Road
 Crawley, W Sussex, RN10 2PJ
 Tel: 0800 521980 Fax: 01293 538646

Company Description
 Fourth Shift is a leading developer of client/server applications software for the manufacturing industry. The Manufacturing Software System (MSS) is a fully integrated manufacturing control system running on PC LANs.

Hardware/Compatibility
 All PCs, Windows, Microsoft NT and Novell NetWare

Geographical Coverage
 Worldwide

Applications
 Covers all manufacturing and process industries

Cost
 Price on application



63 Radius Computer Services Ltd
 Millfield House, Woodshots Meadow,
 The Croydon Centre, Watford, Herts WD1 8YX
 Tel: 01823 255722

Company Description
 PointMan is a new generation enterprise system using a full Windows presentation and client/server technology. It is hardware and database independent. PointMan provides a familiar Windows interface to which users adapt with minimal training and support. It has three highly functional modules, Customer Service, Manufacturing and Financial management.

Hardware
 Client server, MS-Windows Client, UNIX or NT Server


Geographical Coverage
 UK and Euro, plus worldwide support

Applications
 Manufacturing, Distribution & Finance



64 Marcam Solutions Limited
 Seron House, Warwick Technology Park
 Gallows Hill, Warwick CV34 8DD
 Tel: 01925 408999 Fax: 01925 408888

Company Description
 Intimate market knowledge comes from years of close working with industry leaders. For manufacturing management systems within the food/beverage, chemical/pharmaceutical sectors Marcam must always be a contender. If you recognise that your supply chain is becoming more important to your future, and your business would benefit from our industry-specific experience, you really need to investigate Marcam's approach. Contact us & let our experience assist with your production, logistic, financial & maintenance demands.



65 Thomas & Betts Ltd
 Foster Ave, Woodside Park, Dunstable, LU5 5TA
 Tel: 44 (0) 1582 677080
 Fax: 44 (0) 1582 608816

In today's fast moving networking environment with ever increasing data speeds and new EMC legislation, your structured wiring system must meet the exacting demands placed upon it. Thomas & Betts' comprehensive range of connectivity products is designed to meet with your needs of today and those of the unforeseeable future. All you need to know about structured wiring is in our new catalogue. For your free copy, please call us now, or see us on Stand No. V17 at Networks '96.

Geographical coverage: Worldwide



66 International Data Security
 10 Alford Place, London WC1E 7EB
 Tel: 0171 209222 Fax: 0171 209 2383

Company Description
 International Data Security is a foremost supplier of Network Security and Management Product, consultancy, training and services. Working with the OTI and BSI on the establishment of BS7799 as an acknowledged Code of Best Practice for Information Security and acting as the agent for McAfee in the UK in the verification of anti-virus products under the ITSEC criteria. The International Data Security group of companies embraces an active research and development organisation, based in the US, who are working with the major network operating system companies to bring high level C2/ITSEC E3 security to the workstation.


Geographical Coverage
 UK with sister companies in US and South Africa

Applications
 Various LAN Network Security and Management

67 LanBase Pic
 Pipers Court, Thatcham
 Berkshire RG19 4ER
 Tel: 01635 877977 Fax: 01635 877543
 Email: info@lanbase.co.uk

Company Description
 As a specialist Network Systems Integrator, LanBase designs, installs and supports Local and Wide Area Networks. Combining technical expertise with Project Management skills and a unique range of products, LanBase provides flexible, technologically advanced network infrastructures. LanBase became the first direct Bay Networks partner to be both ISO9001 accredited and verified by Bay Networks as an Enterprise Solutions Partner (ESP) in Europe.

Coverage
 UK, Spain and Iberia



68 Security Dynamics Technologies Inc
 Monarch House, Waterford Way
 Wokingham, Berks RG40 2AR
 Tel: 01734 795822 Fax: 01734 795839

Company Description
 Security Dynamics Technologies Inc, founded in 1984, rapidly earned leadership position with the development of their crackproof SecurID user identification and authentication technology. Security Dynamics now has the de facto standard for authentication and encryption technology (through an acquisition with RSA). Many vendors (now over 40) such as Novell, Oracle and Microsoft utilise Security Dynamics software in their major product ranges. Security Dynamics provides total security solutions for remote access, Internet and LAN/WAN access with over 1 million customers using the SecurID Token.

Geographical Coverage
 UK, UMEA, Far East, USA

Cost
 Available on request.

69 Emulex Europe Ltd
 Mulberry Business Park, Fishponds Road
 Wokingham, Berkshire RG41 2GY
 Tel: 01734 772929 Fax: 01734 773237

Company Description
 Emulex is a leading US manufacturer of network access products. These LAN and WAN Solutions include network printer servers, wide area network adapters and remote access servers. Emulex is a technology leader in fibre channel, an emerging high performance industry standard storage and network interface which is being adopted by major computer vendors.

Hardware/Compatibility: Emulex solutions are compatible with the leading network OPS protocols including TCP/IP, IPX, APPLE TALK, NETBIOS, LAT

Geographical coverage: Emulex has sales offices in the USA, Asia and the Pacific Rim

Applications: Novell WAN routing and remote access of networks

Cost: Emulex offers market leadership in value for money

70 Mod-Tap Limited
 7 Northbrook Industrial Estate
 Vincent Ave, Southampton SO16 6PB
 Tel: 0703 701919 Fax: 01703 702147

Mod-Tap manufactures an enhanced structured cabling system for both voice and data applications. The mod-tap system is modular, facilitating the integration of UTP, STP and fibre optic transmission technologies. Mod-Tap registered installations have a 15 year system warranty and a lifetime product guarantee. Mod-Tap is a multi-company. Mod-Tap systems are compliant to industry standards.

Hardware/Compatibility
 ISO11801/EN50173 Class D/EIA568 and EIA TSB's 36, 40 and 40A

Coverage: International

Applications: LANs, Structured Cabling, Coaxial/Mod-Tap stand number MSO at Networks



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71 Networking Enclosures

71 Rittal Limited
 Braithwell Way,
 Hasleby, Rotherham S66 8QY
 Tel: 01709 704000 Fax: 01709 701217

Company Description
 Rittal is the world's largest enclosure manufacturer. Among the products is a comprehensive range of enclosures and accessories designed for the Datacomms/Networking industry. Enclosures for wall mounting or floor standing for equipment or cabling use meet various standards. A 5 day configuration and siting service is available.

Geographical Coverage
 The world

Applications
 All networking/Communications



72 Networking Products & Services

72 Cray Communications
 Caswell Way, Watford Business Park
 Watford, Herts WD1 8XH
 Tel: 01923 258259 Fax: 01923 252260

Company Description
 Cray Communications designs and manufactures a range of networking technologies including high speed switching, routing, and voice and data integration. With a wide range of experience, Cray Communications has the proven ability to integrate these technologies into a single enterprise-wide network.

Hardware/Compatibility
 Products comply with Industry Standards

Geographical Coverage
 Cray Communications has 25 sales offices in five continents and employs over 2,900 people worldwide.

Applications
 As local and wide area networks converge, organisations require a single, enterprise-wide network that will provide transmission of voice, data and image. Cost dependent on size of network.



73 LanOptics Plc
 Thamesbourne Lodge, Station Road, Bourne End, Bucks, SL8 5QH
 Tel: 01628 533433 Fax: 01628 532252

LanOptics
 LanOptics offer high quality networking systems to improve LAN/WAN connectivity for token ring, Ethernet and AS/400 midrange systems. The product portfolio includes hubs, switches, ATM technology and integrated hub/router (Cisco IOS 2500) combinations for Remote Access and enterprise wide network management systems.

NetGuard
 NetGuard, a LanOptics company, introduces the Guardian, an Internet firewall. Unlike most firewall systems, Guardian provides network managers with the ability to restrict user access to all or parts of the various services available on the net. In addition, time limits can be applied to access. NT version is now available.

NetXchange
 NetXchange, a LanOptics company offers a unique fax exchange system for the Internet. The Internet Fax Exchange enables integration with uniform messaging applications such as for voice or E-mail. It is designed for the integration of fax services into Uniform Messaging platforms and is compatible with MAP1, Windows and Windows 95.

Geographical Coverage
 Global

Applications
 LAN & WAN Infrastructure



76 Object Oriented Application Development Environment

76 Data Access UK Ltd
 Lonsdale House, Prince Lane, London W10 3LU
 Tel: 0181 3652424 Fax: 0181 3652345
 E-Mail: marcomuk@dataaccess.com

Company Description
 DataFlex is a complete application development environment with all the tools needed in a single, integrated package. DataFlex combines a procedural and an object oriented 4GL, Application Generator, RDBMS, and a complete set of built-in productivity enhancing tools, including a powerful OO Application Framework.

Hardware/Compatibility
 Visit us at stand 7A78 at Software Development '96 on June 25th to 27th at the NEC and see the power of DataFlex for yourself. Call us on 0181 3652424 for pre-registered tickets.

Geographical Coverage
 World-wide UK distributors: DATOS 01782 382002 / Informa Tech 0141 5541185 / MSG (Cardiff) 01222 235244 / Unicom 0181 7428055



85 Output Management Solutions

85 Holland House B.V.
 P.O. Box 3000, Motorparkweg 1
 5306 ZT 6540EL, The Netherlands
 Tel: +31 (418) 673000 Fax: +31 (418) 673000

Company Description
 Holland House with its flagship product UNISPOOL, is the leading supplier of integrated distributed output management solutions for heterogeneous enterprise networks. It encapsulates all major components in the areas of network-wide output file transfer, fully automated operations, output file viewing and processing, integrated electronic forms and processing and more.....

Hardware/Compatibility
 MPE/iX, HP-UX, OpenVMS, Ultrix, Digital Unix, AIX, SCO Unix, Solaris 2, Slink, Windows NT, Windows, Win95, Novell and OS/2 LANManager

Geographical Coverage
 Worldwide

77 InvertoMatic Victron (IMV)

UK office: IMV Victron UK Ltd, f.a.o. Paul Fletcher
 Tel +44 1455 618 666 Fax +44 1455 611 446

Headquarters: Sales5@Victron.nl

Could we be the first insurance company to present ourselves in the IT guide of the Financial Times? That is our - IMVs - business. Our customers are organisations of all sizes and nationalities who want to insure their companies against productivity & data loss stemming from power failures. Known to you would be UNITED NATIONS, INTEL, MOTOROLA, MIDLANDS ELECTRICITY BOARD, ABB, SIEMENS, AT&T, MERCURY COMMUNICATIONS, CENTRAL BANK OF CIS, BANK OF ENGLAND, COCA-COLA, CIBA-GEIGY, HEWLETT-PACKARD, IBM, DELL, REUTERS, SHELL, HEINEKEN, MERCEDES-BENZ, to name a few of them.

IMV is the result of the 1995 merger between Netherlands based Victron and Switzerland based InvertoMatic. Victron's expertise is high performance uninterruptible power supplies in the low and medium power range, and the integration of these systems in computer environments. InvertoMatic's expertise is big uninterruptible power systems for applications with very high cost of downtime.

We like to see our company as a tree: alive, and with a strong hidden base. The roots are most valuable, with customer support, service infrastructure, technology expertise, and logistical facilities as its major components. Suited to protect from single modems until the complete lighting of an airport landing-strip, the product range is the trunk. The leaves, numerous and constantly renewed, are constituted by the many software versions needed to integrate systems in (managed) networks, and the small adaptations needed to suit projects demands. Roots, trunk and leaves evolve at their own speed as a response to a changing environment. Some customers buy from us because we have an effective solution for


handling power failures in environments with Client/Server architectures, where our PowerFlag software can avoid frustrating domino effects. Others do so because of the unmatched reliability of our products even in the most hostile environments. Others still, do so because of the excellent value for money we offer and the wide spectrum of solutions available. We feel privileged to have our customers. We work hard to allow each to be satisfied with high uptime performance and to be comfortable without the worry of unneeded systems crashes.

Safe and managed power is our business. If you have an interest in uninterrupted power as well, please contact us in the UK. Please E-mail us for inquiries on the continent.

Compatibility
 SNMP version 1&2; WINDOWS NT, 95, 3.11, 3.1; UNIX major vendors; NOVELL 2.x, 3.x, 4.x; AS/400; Mac System; OS/2.

Geographical Coverage
 Subsidiaries in UK, France, Netherlands, Switzerland, Italy, Spain, Germany, Thailand, Singapore, Hong-Kong, Greece; Sales, service and support in all 220-240 V countries including developing countries.

Applications
 Distributed computing, Computer room, Telecom (billing and transport), Industry, Facility Management.



86 Outsourcing

86 CSI (Computing Services for Industry)
 Canal Place
 Leeds LS12 2DU
 Tel: 0345 010105 Fax: 0113 243 6950

Company Description
 CSI Outsourcing specialise in providing high quality, fully managed systems for companies using IBM midrange equipment for key business applications. Service levels to systems users are guaranteed. Services can be based on customer's site or at a CSI location and provided 24 hrs 365 days a year.

Hardware/Compatibility
 AS/400 Ops, Applications, Tech support, LANs, WANs, Desktop

Geographical Coverage
 Service from Datacentre in Nottingham and eight other UK locations



87 Project Management Software

87 Welcom Software
 Southbank Technopark
 90 London Road, London SE1 8LN
 Tel: 0171 401 2626 Fax: 0171 922 8665

Company Description
 Welcom, a privately held corporation, is a worldwide leader in the development and marketing of project management software. With more than 10,000 licenses worldwide, Welcom specialises in helping Fortune 500 companies implement total management solutions.

Hardware
 Windows-based, OLE 2.0 Automation and SQL

Coverage
 Head office is in Houston, regional offices in London and Paris with distributors worldwide.

Applications
 Open Plan Professional and Open Plan Desktop



91 Solid Edge

91 Intergraph (UK) Ltd
 Delta Business Pl, GI Western Way
 Swindon Wilt. SN4 7XP
 Tel: 01793 496000 Fax: 01793 492991

Company Description
 Written specifically for Windows, SOLID EDGE is a revolutionary, high performance parametric 3D Solid Modelling CAD system for mechanical assembly and part modelling. SOLID EDGE signals a new era of usability openness interoperability allowing the designer more time engineering and less time driving a CAD system. Incorporating all the tools to complete part modelling, assembly, drafting, detailing and workgroup data management in one comprehensive package.

Hardware/Compatibility
 Intel based PC systems running Windows 95 or NT

Geographical Coverage
 UK Wide

Applications
 Part design and assembly for manufacturing industry

Cost £5000



96 Voice & Information Processing

96 Brite Voice Systems
 Brannen House, 4 Cambridge Business Pl
 Milton Road, Cambridge, CB4 4WT
 Tel: 0161 975 4044 Fax: 0161 975 4001

Company Description
 Brite Voice Systems is a world leader in providing voice and information processing solutions. Users include major corporate customers, call centres and network operators. Applications range from interactive voice response and computer telephony integration to a range of network services. In addition to integrated system provision Brite can also offer its customers the use of its fully managed service bureau and its experience in the telephony auditing arena.

Geographical Coverage
 International - offices worldwide

Applications
 Voice and information processing



97 UNIX Connectivity Software


97 NCD Software
 Asmeo Centre, Eagle House, The Ring,
 Bracknell, Berkshire RG12 1HB
 Tel: 01344 382054 Fax: 01344 382052

Company Description
 NCD Software is a major vendor of information access products. PC-ware is a total solution for PC & UNIX network integration, providing enterprise networking & tools to make networked PCs easy to manage for UNIX professionals. Marathon for Windows 95 / NT is an NFS solution, providing UNIX file & print integration & access to IP host-based applications.

Hardware
 Windows 3.x, Windows 95 & Windows NT

Geographical Coverage
 World-wide via a network of distributors and resellers.

Cost Price
 available



98 Voice Processing & CTI Solutions

98 eurovoice limited
 Copdock House, Old London Rd, Ipswich, IP8 3NW
 Tel: 01473 730000 Fax: 01473 730001
 Web: http://www.eurovoice.co.uk

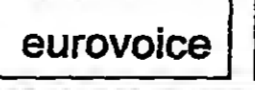
Company Description
 eurovoice is a specialist supplier of voice processing, computer telephony integration and internet-based solutions. Our new SWAN OmniServer provides flexible voice, fax and internet functionality on a high-performance Windows NT based platform.

Hardware/Compatibility
 Most databases and host systems, most PBXs & ACDs.

Geographical Coverage
 eurovoice focuses on Western Europe and Scandinavia.

Applications
 IVR/CTI, On-line services

Costs
 Solutions from £10,000



99 Voice Recognition Software & Systems


99 VOCALIS
 Cheston House, Mill Court, Station Rd,
 Gt. Shelford, Cambridge CB2 5LD
 Tel: 01223 848177 Fax: 01223 848178

Company Description
 Vocalis is a world leader in speech technology and call processing applications, delivering speech-controlled systems that increase business efficiency and make communication easier. Products include a virtual telephone operator, a voice dialling system and bespoke applications for call centre transaction processing.

Hardware/Compatibility
 Industry standard ISA hardware

Geographical Coverage
 Global

Applications
 Teleshopping, help desks, travel information, retail enquiries/ordering




100 Worldwide Web

100 Ethic Distribution Ltd
 Ethic House, Meadow Court, Off Market
 Place, South Norampton, Derbyshire
 Tel: 01773 863668 Fax: 01773 863918

Company Description
 Commercialization of the world wide web, more companies are demanding an effective and standard method to monitor their reach through the internet. And with traffic levels growing exponentially, any delay in fixing problems can result in thousands of missed opportunities. Webwatcher Executive™ builds on the positive customer feedback gathered from the successful release of Caravelle Webwatcher™ late in 1995. See Caravelle Webwatcher Executive™ on stand W18 at Networks '96.

Geographical Coverage
 The world of the web

Applications
 How effective is your web site?

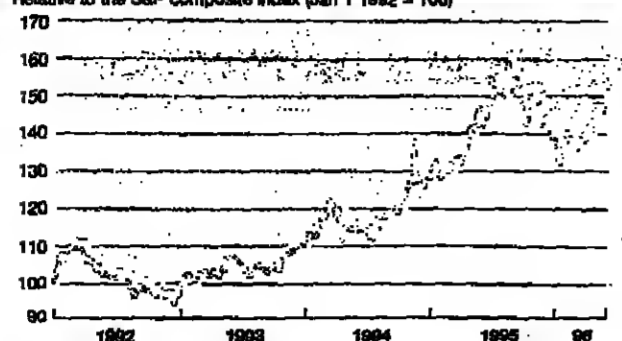


مكتبة العصر

STOCKWATCH

S&P High Tech Index

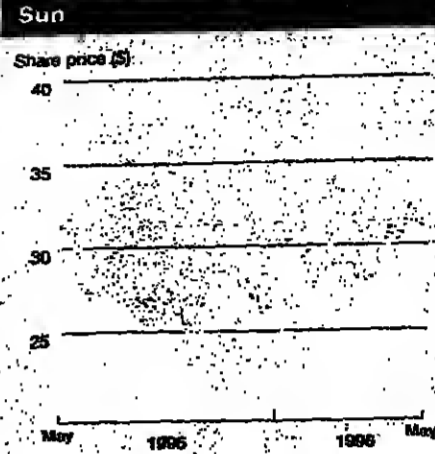
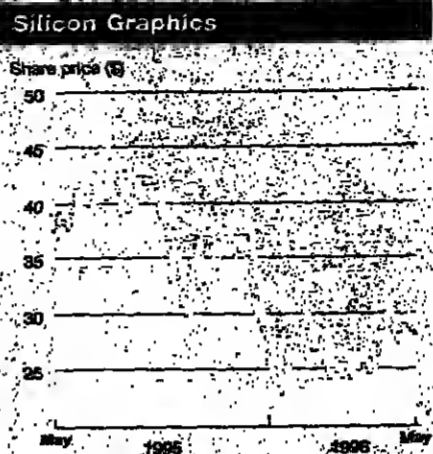
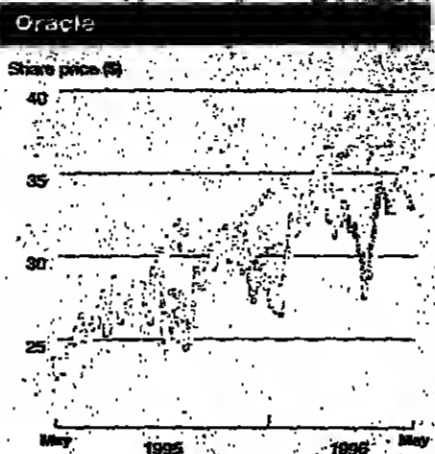
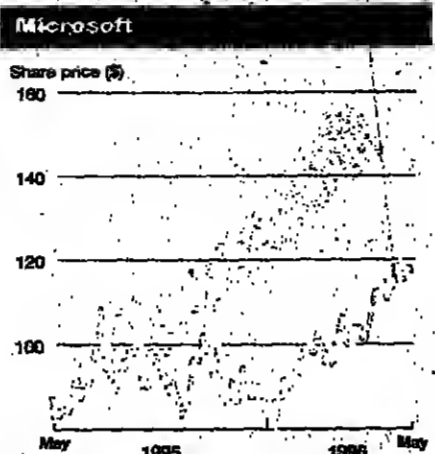
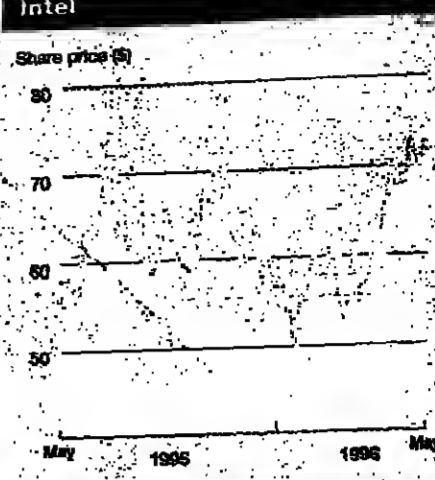
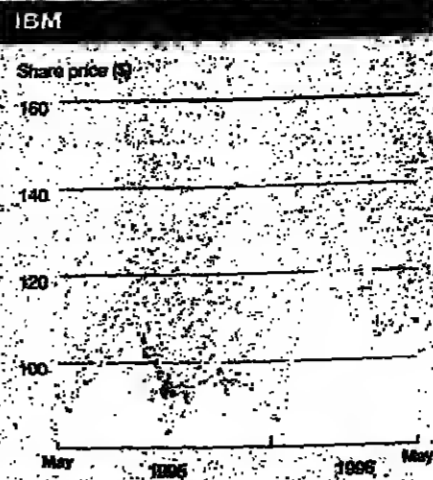
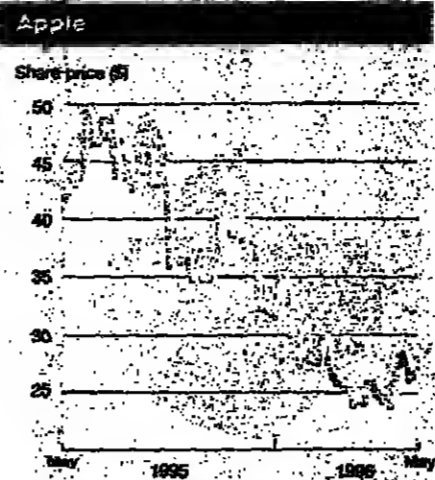
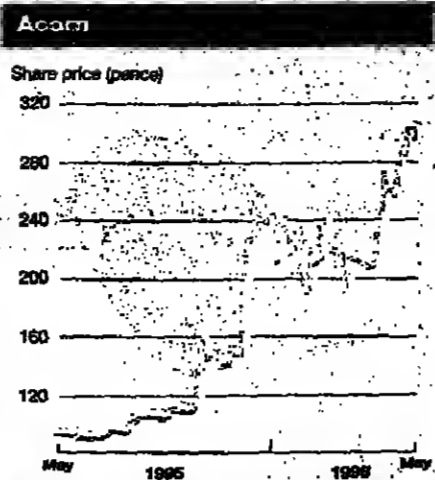
Relative to the S&P composite index (Jan 1 1992 = 100)



S&P High Tech Index companies

Adv. Micro. Dev.	Digital Eq.	Northrop Grumman Corp.
Alco Standard	DSC Communications	Novell
Arndahl	EG&G	Northern Telecom
Andrew	First Data	Oracle Corp.
Apple Computers	Gen. Dynamics	Perkin Elmer
Applied Mats	Hewlett-Packard	Pitney-Bowes
Autodesk	Intel	Raytheon
Automatic Data Proc.	Intergraph	Rockwell Int.
Boeing	Int. Bus. Mach.	Scientific-Ait.
Cabletron Sys.	Lockheed Martin Corp.	Shared Med. Sys.
Candian	Loral Decd	Silicon Graphics
Cisco Systems	McDonnell Douglas	Sun Microsystems
Computer Assoc. Intl.	Micron Tech.	Tandem Computers
Cmp. Sciences	Microsoft	Tektronix
Compaq Computers	Moore	Texas Instrs.
Cray Research	Motors	Unisys
Data General	Nat. Semiconductor	United Technologies
		Xerox

Source: Datastream



Stockwatch comment • By Paul Taylor

IT companies ride the Internet wave

More suppliers are committed to launching network computers later this year

US technology shares were generally higher at the end of May month higher, although some shares remained under pressure, reflecting uncertain industry conditions.

The gains came despite continuing signs of weakness in the Semiconductor Industry Association's measure of chip demand in April. The ratio of orders received to orders shipped, fell to 0.78 from March's 0.79, which had been the lowest figure in nine years. Despite this, the Nasdaq composite, with a technology content of 40 per cent, closed the month 35.1 points higher at 1225.62.

Among the leading information technology shares, Microsoft, Intel and Compaq Computer all posted gains at the start of the month after reporting generally better than expected first-quarter results and mostly positive comments on the earnings outlook.

In contrast, Apple Computer's shares closed the period at little changed at 24% despite unveiling a new strategy - including a slimmed-down product line - designed to return the troubled US computer manufacturer to profits.

Mr Gil Amelio, who took over as chairman three months ago after Mr Michael Spindler was ousted, said Apple was at a crossroads - "we can return to prosperity or begin a long slow decline into irrelevancy. The difference will depend on how well the organisation comes together behind united goals," Mr Amelio said.

However, the group, which reported a \$760m (\$450m) on sales, down 18 per cent to \$2.2bn in the second quarter, subsequently warned in a Securities and Exchange Commission filing that it will remain in loss this year.

Dell Computer's shares rose sharply after it announced first quarter earnings which comfortably outpaced most analysts' forecasts. The group reported that its earnings rose 33 per cent to 84 cents a share. Other recent gainers have

included Oracle, the second largest software group in the world, after Microsoft, whose chairman Mr Larry Ellison has been the main driving force behind the concept of the network computer or 'thin client'.

Last month saw Oracle, International Business Machines, Apple and Netscape jointly unveil detailed and open specifications for the new machines - designed primarily to be low-cost devices for exchanging information over the Internet or corporate intranets - together with a list of early manufacturers.

Among those companies committed to launching network computers later this year, Acorn, the UK-based technology group which undertook much of the work on the NC 'reference design', said it will launch a machine dubbed the NetSurfer.

Like other companies which have succeeded in synchronising their strategies with the wave of investor interest in all Internet-related matters, Acorn's shares have risen sharply since last Autumn.

Other companies which appear to be riding the 'Internet wave' include Oracle, whose strategy is now closely linked to the growth of enterprise networking and the move towards rich content and multimedia Internetworking; and Sun Microsystems whose servers continue to provide much of the corporate computing power behind the Internet and internal intranets.

Sun also continues to benefit from interest in Java, the Internet 'apple' programming technology which has now been re-designated a mini operating system. In contrast, Silicon Graphics shares remain under pressure as investors weigh the impact of the increasing competition posed by Intel-powered machines at the low end of the workstation market and digest the implications of Silicon Graphics' recent acquisition of Cray Research.

Next month's FT-IT Review will include a focus on ATM and fast-switching - the topic was held over from this issue, due to pressure on space. The July issue will also look at applications for multimedia. For more details, see panel, page 2

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